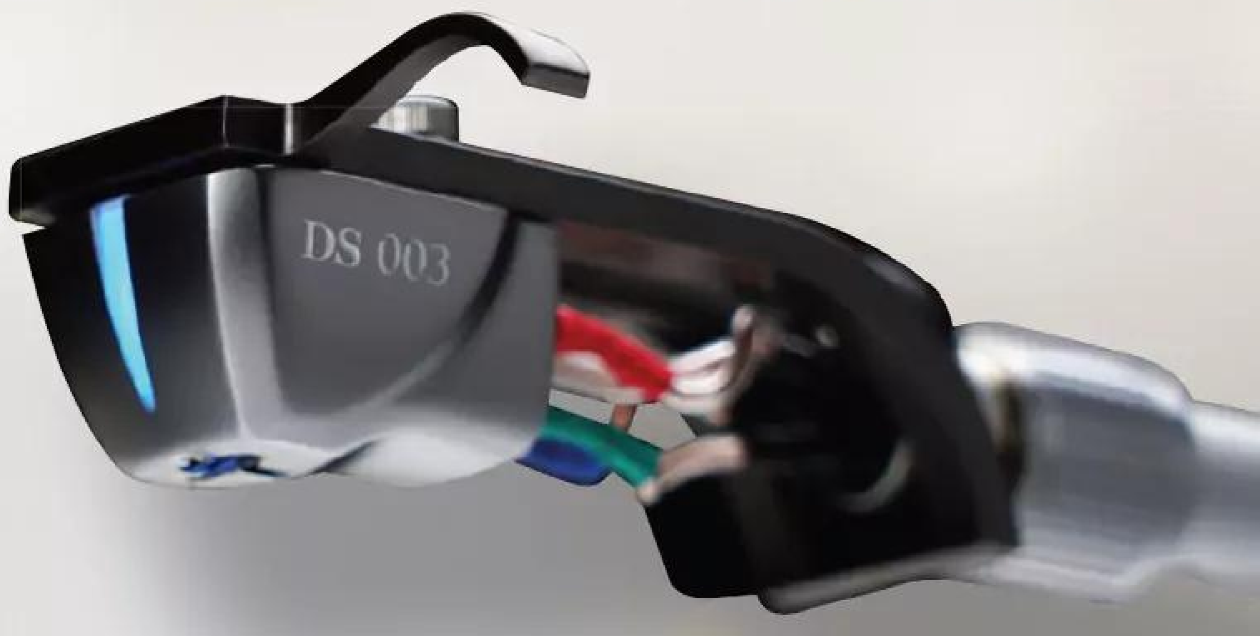
AUSTRALIAN HI-FI SHOW GUIDE INSIDE

australian hi-fi



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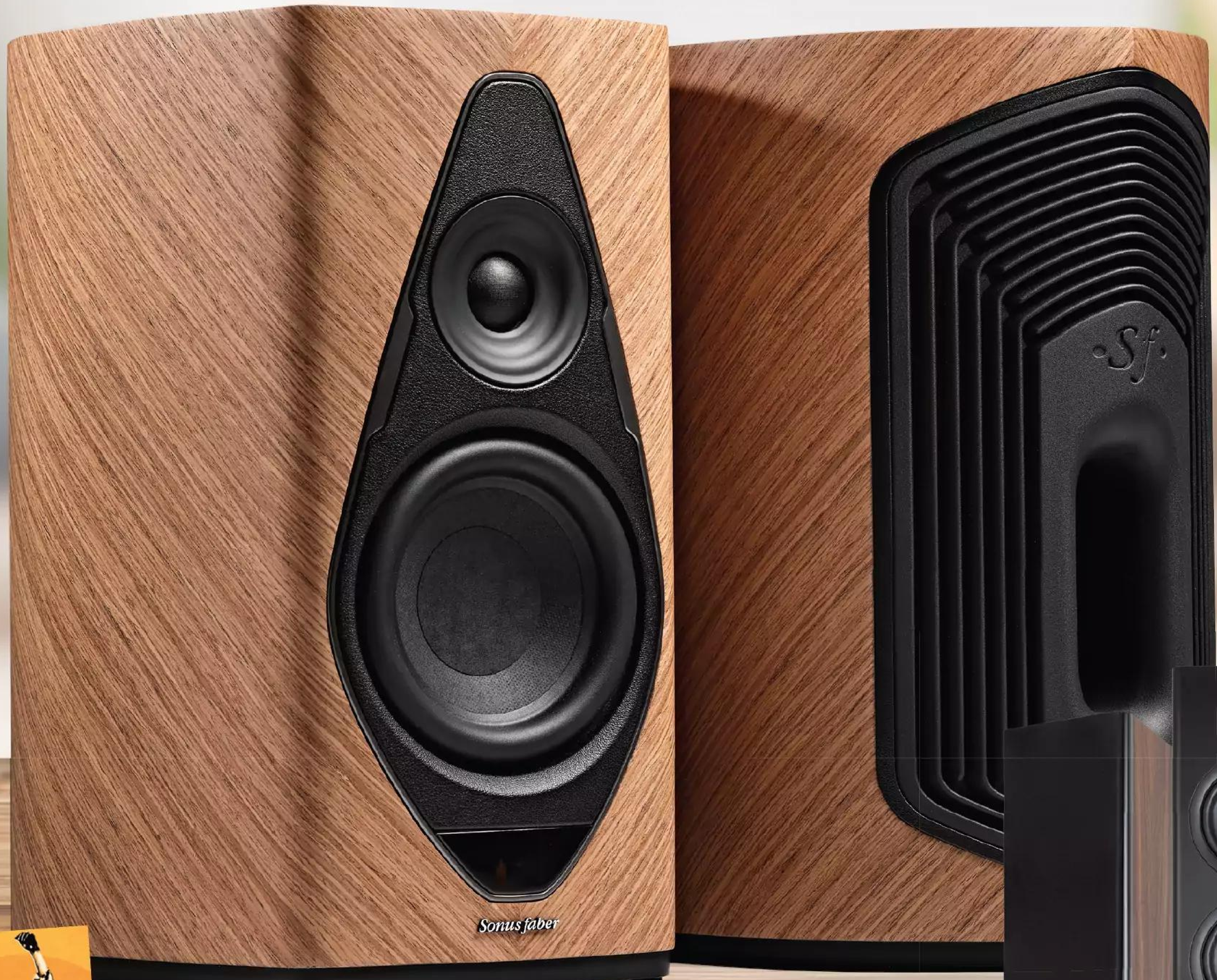
DS Audio's optical cartridges break new ground

PERFECT DUET

Two beautiful boxes = one superb Sonus faber system



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SPELLBINDING

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HI-FI PRIMER

MUSIC MANAGER

How to take back ownership and build your own digital library

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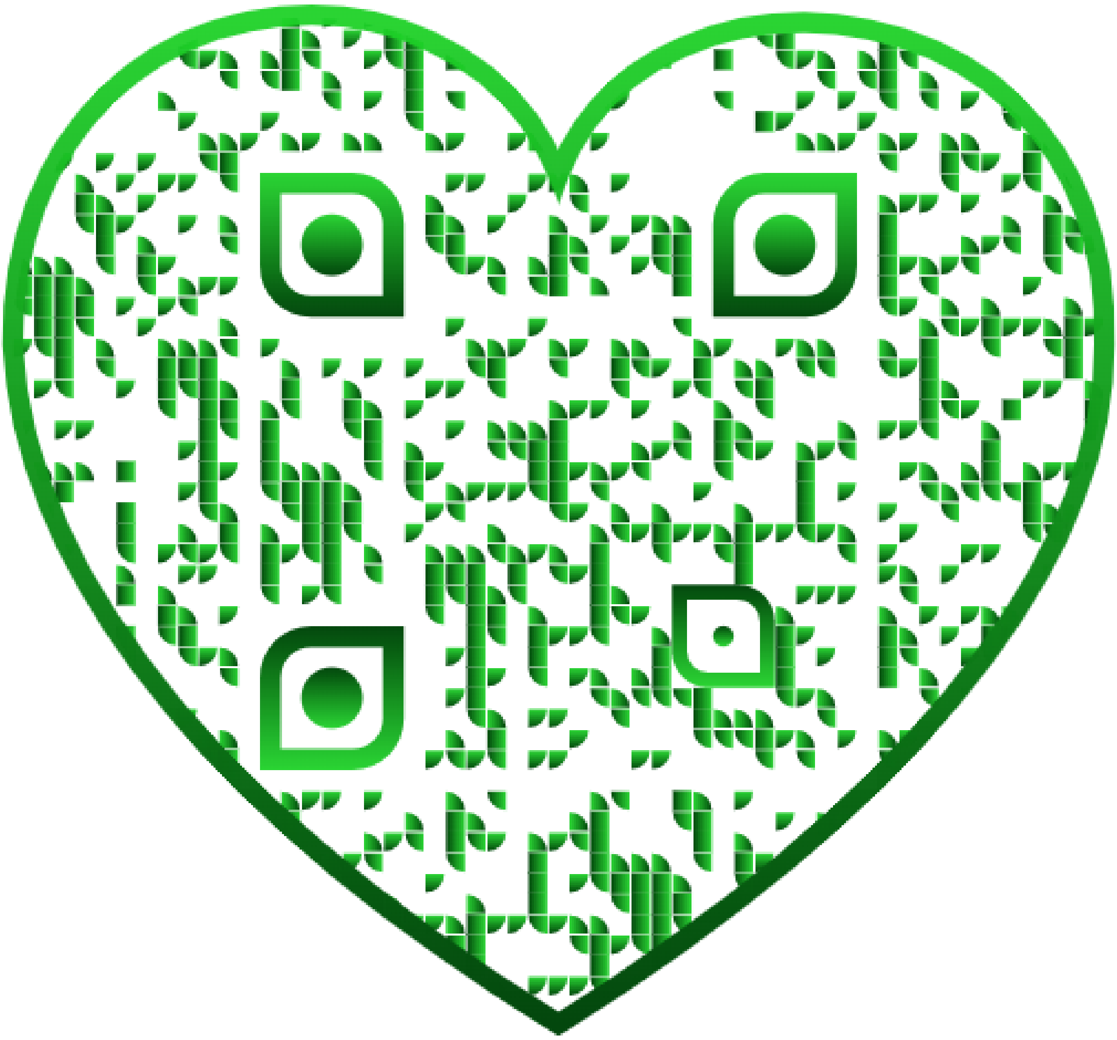

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Editor's lead in

Each and every year, new features and technologies arrive to push the boundaries of consumer electronics further than the year previous. Very few, however, tend to enrich our daily lives immediately, whether that's because they aren't instantly adopted by the masses or simply aren't useful on such a frequent basis. Thinking about how my listening habits have changed in recent years, I've realised that one fledgling feature has played more of a role in it than any other: Tidal Connect.

For the uninitiated, Tidal Connect lets you 'cast' the service's catalogue to compatible audio devices from within the Tidal app, with the songs streamed from the internet instead of locally on your device. As Spotify Connect does for, well, Spotify; AirPlay for Apple Music; and Google Cast for Amazon Music (and others). These technologies let you control your music streaming playback from an app that's familiar to use, meaning you don't have to rely on separate dedicated app(s) developed for specific streaming products.

The rise of such widely adopted streaming protocols has led to an increase in endpoint streamers, which essentially don't have their own streaming platform (and app) but simply 'rely' on these platforms so that streams can be accessed directly from an owner's music service of choice.

Now that Tidal Connect is well supported by hardware *with* their own app too, I'm using those apps less and less, satisfied with streaming from the native Tidal app to various products in my house. I can't say I miss those not-too-distant days of being forced to juggle the DTS Play-Fi app for my streamer, the Sonos app for my Play:1, and the Naim/Focal app for my Mu-so Qb. I first and foremost use Tidal Connect for most kit I have and, indeed, come across in my line of work. It's pretty darn handy.

The thing is, I'd hate for those dedicated brand apps to disappear. Firstly, the best ones tend to offer optimal multi-room control for multiple products within that brand's (or family of brands') catalogue. Secondly, most offer a library management and interface for files stored locally or on your NAS drive that are miles better than free alternatives — a pretty big deal for those who primarily stream their own network-stored files. Thirdly, many offer exclusive in-app features that cannot be delivered through a third-party cast solution. And lastly, the most polished can be considered rather swish, welcome accessories for (typically higher-end) kit that enhance them as desirable, aspirational products. Besides, I find it reassuring to know one brand has control over hardware and software when it comes to the sound path, among various things.

Running a software app and keeping on top of all the licensing and updates requires a department of people for most brands, whether in-house or outsourced. So I'm not begrudging those who don't have a sophisticated one of their own — for many, it simply isn't feasible from a resource and/or financial point of view, and so being able to support third-party protocols instead is a true enabler. But for those who have gone, and still go, to the trouble, I for one very much think it's worthwhile — not to mention 'safe'. What if, say, the software goalposts change out of a brand's control and one (or more) of the protocols their product(s) support no longer plays ball with a streaming service, or becomes no more altogether? Suddenly, that product is possibly less desirable or — worse — defunct. It's arguably a slim risk nowadays considering how established many of these protocols are, but a risk all the same.

'The road not taken looks real good now,' sings Taylor Swift about relationship regrets in *'tis the damn season*. (As reviewer-at-large Greg notes in his Richter review (page 28), Taylor's in town, so I'm pandering to it.) And I hope brands with their own apps don't feel that way about the road taken by endpoint streamers.

Such apps may not last long if a music management app as sophisticated and well-supported as Roon was free (or significantly less than $230 per year), mind. But today, and despite the convenience of streaming protocols like Tidal Connect, I think (and hope) there's plenty of life left in the brand playback app yet.

rebecca.roberts@futurenet.com

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Australia's greatest hi-fi show is back! Following its inaugural event last autumn, the three-day audio and AV show is returning to Sydney in April, bigger and better than before. Here's a sneak preview of what lucky attendees can expect to see and hear.

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Nirvana's 30th-anniversary 'In Utero' release spans eight LPs or five CDs, with five bonus tracks and B-sides and, in the vinyl package, two complete shows. Also, it's 20 years for Muse's 'Absolution', the reissue for which comes with an excellent 40-page book detailing how the album came together.

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OUR FRONT COVER

A speaker-centric cover featuring one of Australia's most iconic designs, plus Italian works of modern art that offer far more than what meets the eye.

"One-body separate"

In preparation for its celebrations marking 100 years in the audio business in 2025, Japan's Luxman has announced the arrival of its new flagship L-509Z integrated amplifier. And it's so confident of the amp's abilities that the press release refers to it as a "one-body separate"!

Building on the legacy of Luxman's previous L-509X flagship, which sat at the top of its integrated amplifier line for seven years, the new reference model produces a power output of 120 watts per channel into an eight-ohm load (or 240 watts per channel into four ohms). It also sees the brand's patented LIFES (Luxman Integrated Feedback Engine System) technology — first seen in the M-10X power amp, followed by the C-10X — used in both the preamplifier and power amplifier stages for the first time.

The L-509Z benefits from a redesigned negative feedback circuit, with the next-gen circuitry offering what Luxman teases as "extremely high-quality sound". A new electronically controlled attenuator mechanism, comprised of a new rotary encoder and weighted rotation, has supposedly resulted in a "smoother and more precise volume control than ever before", too.

This integrated isn't short of connectivity options: at the back are four single-ended RCA line-level inputs and two balanced XLR inputs, while 4.4mm and 6.3mm headphone jacks adorn the front panel. The L-509Z can also switch between two pairs of loudspeakers.

A phono stage upgraded with improved circuitry supports both moving-magnet and moving-coil cartridges, and lets you switch between low and high settings for the latter. The highly stable power supply, meanwhile, has been designed to deliver some serious oomph and stability, while low-resistance speaker relays and peel-coated circuit boards are all housed within the ultra-thick aluminium chassis.

The L-509Z sports an LED display for checking volume level, alongside two rather lovely analogue VU meters, a pair of rotary control knobs — one for controlling volume and the other for selecting input — and various dials for speaker selection, muting and tone adjustment. A supplied remote completes the package.

The Luxman L-509Z will be available imminently for $18,499.

For more information, contact Audio Active on (03) 9699 8900 or visit www.audioactive.com.au

Well-bred Sandwiches

A 63-year-old sandwich might not sound that appetising, but these new loudspeakers by Leak are anything but stale. The Sandwich 150 and 250 draw on the British company's classic speaker design which debuted in 1961, but have been injected with modern engineering to make for what looks like a very tasty treat.

The Cambridge, UK-based company made a comeback in 2020 with its first new products since the 1970s and is now looking to cement its place in the modern hi-fi landscape.

Because you will have undoubtedly been wondering, the original Sandwich took its name from the unique construction of its mid/bass drive unit. It was the first to be made from a 'sandwich' of different materials, namely expanded polystyrene foam between two sheets of aluminium foil. Its light yet rigid makeup aimed to reduce distortion and consequently improve accuracy.

The new Sandwich 150 and 250 bring that same — now familiar — concept into a 21st-century Leak design. The outer surfaces use a stiff aluminium skin bonded to a core of aircraft-grade polymethacrylimide (PMI) structural foam for, the company claims, "immense rigidity".

The Sandwich 250 is the larger of the two standmounts, a three-way model that stands 65.5cm tall compared to the two-way Sandwich 150 with a height of 41.5cm. Both have a 3cm textile-dome tweeter — the 250 combines it with 28cm bass and 11cm midrange drivers, while the 150 settles for a 17cm mid/bass driver. All these drive units feature Leak's trademark Aluminium-Foamcore Sandwich cone.

Rather fittingly, the speaker cabinets are also built like a sandwich. A special glue filling is sandwiched between an outer layer of MDF and an inner layer of high-density particle board to scatter and dampen resonances. There's also spot-bracing and a front-rear brace that echoes the original design.

At the rear, the cabinets are dual ported, with the ensuing increased airflow aiding bass response. They look like a modern take on the classic Sandwich, too, with a walnut veneer applied by hand, complemented by aluminium driver trims and an aluminium insert around the baffle's edge.

Want to join the, er, club Sandwich? The 250 costs $4,799 per pair (or $5,699 with dedicated floor stands) while the 150 is $2,399 per pair.

For more information, contact AV Revolution on (02) 9521 4844 or visit www.avrevolution.com.au

LSX II LT – The new addition to the award-winning LSX family. Same great sound, new lower price.

Designed as a streamlined version, LSX II LT shares the same immersive High-Fidelity sound and key technologies as the LSX II, at a price you'll love. Powered by KEF's Music Integrity Engine and signature Uni-Q driver array, this compact wireless HiFi speaker-system delivers unparalleled sound clarity. Effortlessly stream anything including AirPlay 2, Chromecast and Spotify, or seamlessly connect to your desktop, laptop, TV and more through HDMI ARC and USB-C inputs.

Sound by KEF. Design by Michael Young.

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Leftovers recipe

It's been 20 years since Shanling last launched a CD player, a small, blink-and-you'll-miss-it run of 300 units for the CD-T300 back in 2004. Now, the all-new CD-T35 is here to pick up where that left off — only this time round it is limited even further, to just 99 units.

That's all down to the limited availability of components that the company says are "crucial" to the history of Shanling and "critical" to its house sound.

This includes AKM's AK4499EQ DAC, also used in Shanling's M8 and M9 high-res music players. This flagship chipset was discontinued following a fire at the Japanese manufacturer's factory in 2020, but Shanling has gotten its hands on the remaining units.

The CD-T35 also includes the Philips CD-Pro 2, a popular CD drive that utilises linear tracking, runs an advanced decoding system for error-free disc reading and is housed in an overbuilt die-cast metal body.

Shanling says its audio engineers have also had to reach into their last remaining stock of its favoured capacitors and wiring and solder materials, suggesting this player truly is a shrine to the Shanling sound. Indeed, it sounds like quite the leftovers recipe, akin to a hearty winter soup made from the remnants of a Sunday roast.

Just like its predecessor, the CD-T35 has a three-legged design and a tubed output stage that comprises four hand-matched 12AU7 tubes and promises sonic warmth and smoothness.

There is also a custom I/V stage, with a dual split power supply divided between the player's digital and analogue sections. Outputs comprise RCA, balanced XLR and digital coaxial, while a USB-B input is also onboard for those who wish to use the CD-T35 as a standalone DAC.

The CD-T35 has another clever trick up its sleeve, too: built on an Android-based operating system and powered by an octa-core Snapdragon CPU, the player can offer AirPlay and DLNA playback over wi-fi, plus access to streaming services such as Tidal, Qobuz and Spotify. Control can be managed through the HD touchscreen on the CD-T35 itself or via the Shanling companion app.

Want to listen through headphones? The CD-T35 has an optional headphone amplifier module, too, offering a trio of headphone outputs — a single-ended 6.4mm, balanced 4.4mm and balanced XLR. A choice of four gain stages means it should be capable of driving even the most demanding headphones.

The privilege of such private listening will set you back extra, mind you… and the CD-T35 isn't exactly cheap in the first place. The standard version costs $17,000 USD (north of $26,000), rising to $19,000 USD (around $30,000) when paired with the headphone amp section. And that's if the CD-T35 is still available, having gone on sale internationally in January.

For more information, contact Capisco at 043 794 9444
or visit www.capisco.com.au

Naim goes Class D for new Nova

If you've ever eyed up Naim's acclaimed Uniti streaming range but found it coming up short in the power output department, you might be pleased to know that the brand has just announced its most powerful streaming player to date.

Almost doubling the power of the regular 80 watts-per-channel Uniti Nova, the Uniti Nova PE (which stands for 'Power Edition') is a convenient just-add-speakers streaming amplifier that packs 150 watts per channel (into eight ohms).

It should therefore be capable of driving even the most demanding of loudspeakers, to fill the largest of rooms. However, there is something of a twist — and audio purists might want to look away now.

The big news here is that Naim's general preference for Class AB amplification has been sidelined for Class D amplification. Of course, the British company does have some experience here, having implemented it within the Mu-So family and its 'Naim for Bentley' in-car system, but this is perhaps its most notable inclusion yet.

Naim says the resulting sound will be punchier and expressive yet still as eloquent and considered as we have all come to expect from this eminent product range.

Just like the original Nova, the Uniti Nova PE offers a plethora of connectivity options for music playback. For digital sources, that includes two pairs of optical (up to 24-bit/96kHz) and coaxial (up to 24-bit/192kHz, DSD 64) inputs, plus one BNC (up to 24-bit/192kHz, DSD 64) and HDMI. There's a USB-A input both at the front and rear for attaching external drives.

As for analogue, there's a choice of RCA and five-pin DIN inputs, a second set of RCA outputs for bi-amping your speakers or adding a subwoofer, should you wish to, and a headphone output.

Wi-fi is onboard (802.11 b/g/n/ac) for direct access to internet radio stations and music streaming services and platforms, including AirPlay 2, Chromecast, UPnP, Tidal Connect, Spotify Connect, Qobuz and Apple Music. Roon Ready support is also on the menu, as is aptX Adaptive Bluetooth and the ability to use it in a multi-room environment with other Naim players via the dedicated app.

This is all wrapped up in a familiar brushed aluminium casing with a five-inch colour screen and, perhaps you'll agree, one of the best volume dials known to man. There are a handful of quick-access buttons next to the display, but further controls can be found on the included remote, which handily doesn't require line of sight to work.

The Naim Uniti Nova PE costs $18,500.

For more information, contact Westan on (03) 9541 8888
or visit www.westan.com.au

MQA rescue mission: complete

The Lenbrook Group of Companies, owners of NAD Electronics, PSB Speakers, Bluesound and the BluOS multiroom platform, has created a new business unit that will oversee the growth of the MQA and SCL6 technologies it acquired in September.

The new Lenbrook Media Group, which is being overseen by former MQA CEO Mike Jbara in his newly appointed role as vice president and general manager, will develop the portfolio's content management solutions and, as per the official press release, 'pursue new opportunities that fit Lenbrook's vision to offer increased choice to music fans and enthusiasts for quality audio'.

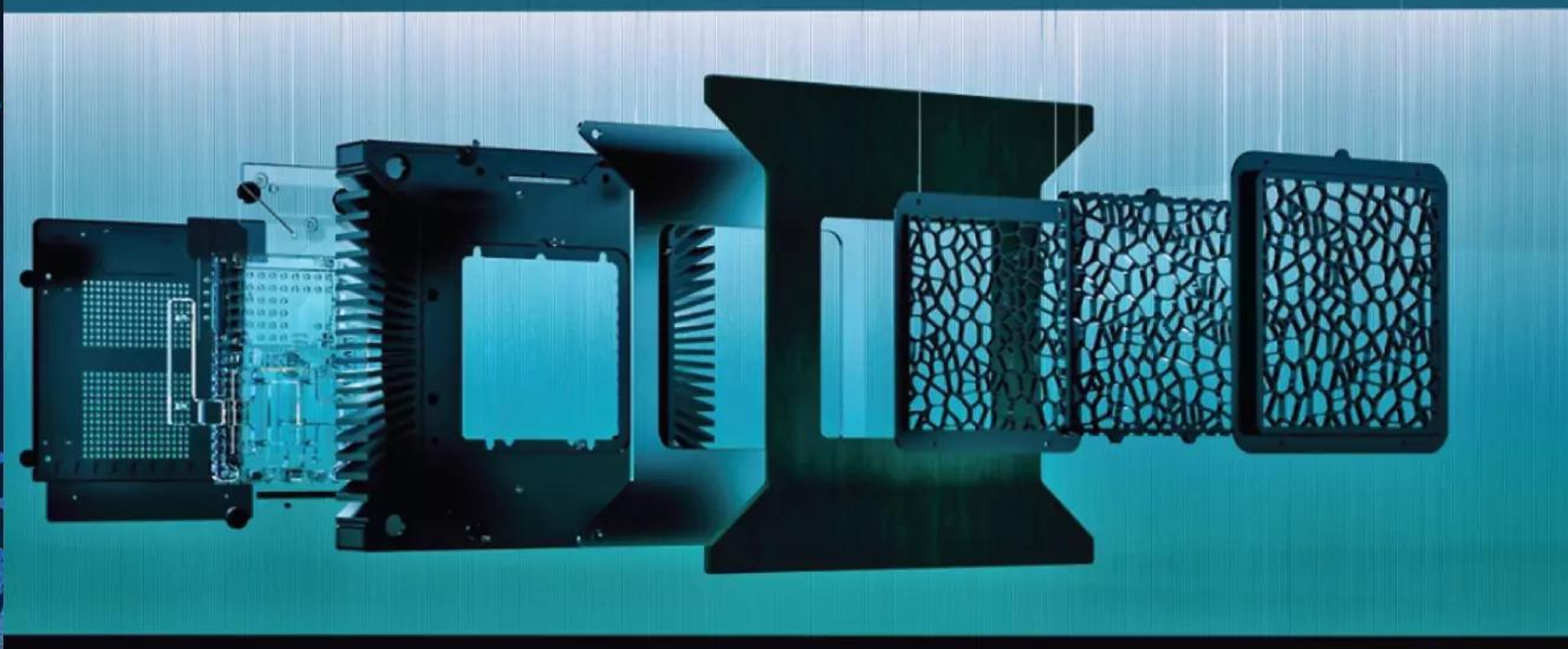
This is the first MQA-related 'news' out of the Lenbrook stable since it rescued MQA Ltd from administration, and it strongly insinuates the company's intent to use the established MQA and brand-new SCL6 codecs for future hi-res solutions, presumably in both software and hardware.

Both codecs have been designed to deliver high-quality ('better than Bluetooth') wireless music streaming. MQA is a codec that efficiently packages studio-quality audio for easy streaming and is used to power hi-res streams on Tidal (now alongside the service's new hi-res FLAC library). Meanwhile, SCL6 is touted as a wireless transmission technology that can retain the maximum possible sound quality of any audio file over Bluetooth, wi-fi or Ultra Wide Band wireless connections.

Hi-res, PSB-branded wireless headphones from Lenbrook are on the cards, supposedly due to arrive this year, courtesy of a collaboration between PSB, MQA technologies and smart-hearables start-up firm Sonical. And this new division could mean other products aren't too far down the road either.

Gordon Simmonds, president and CEO of Lenbrook, says that the acquisition of MQA's assets will help it facilitate high-quality music experiences throughout the chain, supporting "creators in the recording studio with capturing and delivering directly and in the highest quality, their art into the homes of music lovers".

"Creating the Lenbrook Media Group allows us to fully capitalize on this unique position by giving it focus, and putting the right strategies, structure, and resources in place," he says.



A digital heavyweight

One of the more exclusive audio announcements at the Consumer Electronics Show (CES) in January was that Roon was launching a new flagship server, marking the brand's first hardware launch since it was acquired by Harman International (parent company of audio brands Harman Kardon, JBL, Arcam, Mark Levinson, AKG and Revel) in November.

The impressively titled Nucleus Titan is naturally designed to work with the service's digital music management platform, and brings several equally impressive features to the table, not to mention your choice of three snazzy new outer shells — metal, stone composite and wood.

The Nucleus Titan features a precision-machined billet aluminium enclosure made from a solid metal block, with Roon citing advancements in "manufacturing processes and hardware customization" that have allowed it to deliver a stylish "statement piece" with the three finish options for that interchangeable top plate.

Like Roon's previous flagship, the Nucleus Plus, the new Titan is a dedicated server/streamer optimised to work with Roon's OS to deliver "bit-perfect playback" of your hi-res digital music collection to a Roon-compatible hi-fi system. Where the Titan supposedly surpasses its predecessor is in performance quality and its self-cooling design with "silent, fan-less operation".

The Titan also sports a pair of USB-C, USB-A and audio-only HDMI ports and comes in three internal storage sizes: 2TB, 4TB and 8TB. Which you decide on will naturally impact the price, though the base model (no storage) costs $6,299.

The original Nucleus and step-up Nucleus Plus had starting prices of $1,459 and $2,599 respectively, so we're talking about an ambitious step up in price (and hopefully performance) here. Both older Nucleus models are now discontinued.

The Roon software itself isn't exactly cheap either, of course, costing $15 USD per month or $12.49 per month if you pay the annual fee upfront. Want a lifetime subscription? A single $830 payment gives you full investment in what Roon can do — which is, by the way — a lot.

For the uninitiated, Roon is a music management platform that combines your stored digital music files with millions of tracks from Tidal and Qobuz (provided you have a subscription to them) into a single, searchable, dynamic interface that includes artist bio, liner notes and more. An impressive number and variety of modern streaming hi-fi kit is compatible with the platform, too.

Of the new hardware launch, Roon co-founder Enno Vandermeer said: "Nucleus Titan continues our long-standing goal of providing customers with Roon server options that correspond with their specific needs and desires. CPU and SSD technology has evolved significantly since we first released Nucleus, and we've taken advantage of those innovations. With Titan, we've created a high-performance device that fuses precision manufacturing with aesthetics that evoke the interwoven nature of our music collections and Roon's finesse for music exploration. We're very excited with the results and our ability to provide our customers with the ultimate Roon software platform."

For more information, contact BusiSoft AV on (03) 9810 2900 or visit www.busisoft.com.au

Centennial celebrations

Happy centennial birthday, Beyerdynamic! Founded in 1924, the German audio brand went on to form a reputation as one of the most esteemed manufacturers of studio-grade headphones in the world, and it's celebrating this massive milestone by launching a limited-edition version of one of its most popular headphones, the DT 770 Pro.

The new DT 770 Pro X Limited Edition over-ears take the benchmark-setting features of the regular DT 770 Pro model and add the Stellar.45 dynamic driver system found in the exceptional DT 700 Pro X, aiming to combine the classic design and form with more premium internal components for an uplift in sound quality.

The new limited-edition model should be compatible with a broad spectrum of sources, not requiring a huge amount of oomph to drive thanks to their relatively low impedance of 40 ohms. The inclusion of a detachable Mini-XLR cable gives the anniversary model an edge when it comes to versatility, too. The centenary edition also adds a recess in the headband padding for additional comfort over long periods, while an anniversary emblem has been stamped onto the side of the headband to distinguish this special pair.

"We wanted to commemorate our 100-year milestone by creating headphones that pay homage to our past, and empower studio professionals of the future," said CEO Andreas Rapp. "By combining the beloved features of the DT 770 Pro with the latest driver technology of the DT 700 Pro X, the Limited Edition delivers unparalleled performance".

The DT 770 Pro X Limited Edition studio headphones are available now for $349.

For more information, contact Synchronised Technology on 1300 467 968 or visit www.syntec.com.au

Discreet Music, this is not

Neon, colour-changing record player, anyone? Brian Eno is launching yet another vinyl-spinning feast that is as much for the eyes as it is for the ears, following his original 'Turntable' released in 2021.

The fittingly named 'Turntable II' is, like its predecessor, built around a frosted-cast acrylic and LED light design, with the platter and base able to change colour — this time 'independently and seamlessly' phasing through combinations of 'generative colourscapes'.

'The pattern of lights, the speed at which they change and how they change are programmed, but programmed to change randomly and slowly,' the announcement reads. Speaking about the Turntable II's artistic and aesthetic ambition, Eno said: "It's the softness of these colours and the way they merge with each other that is so seductive… when it doesn't have to do anything in particular, like play a record, it is a sculpture."

Eno likens his approach to fusing light and sound for the record player to that of his paintings and other artworks, which have been a part of his life longer than music-making, the creative having studied painting and experimental music at Ipswich Civic College's art school. "Since my first experiments with light and sound in the late 1960s," said Eno, "I've never ceased to be fascinated by the amazingly intricate, complex and unpredictable results produced by simple deterministic systems."

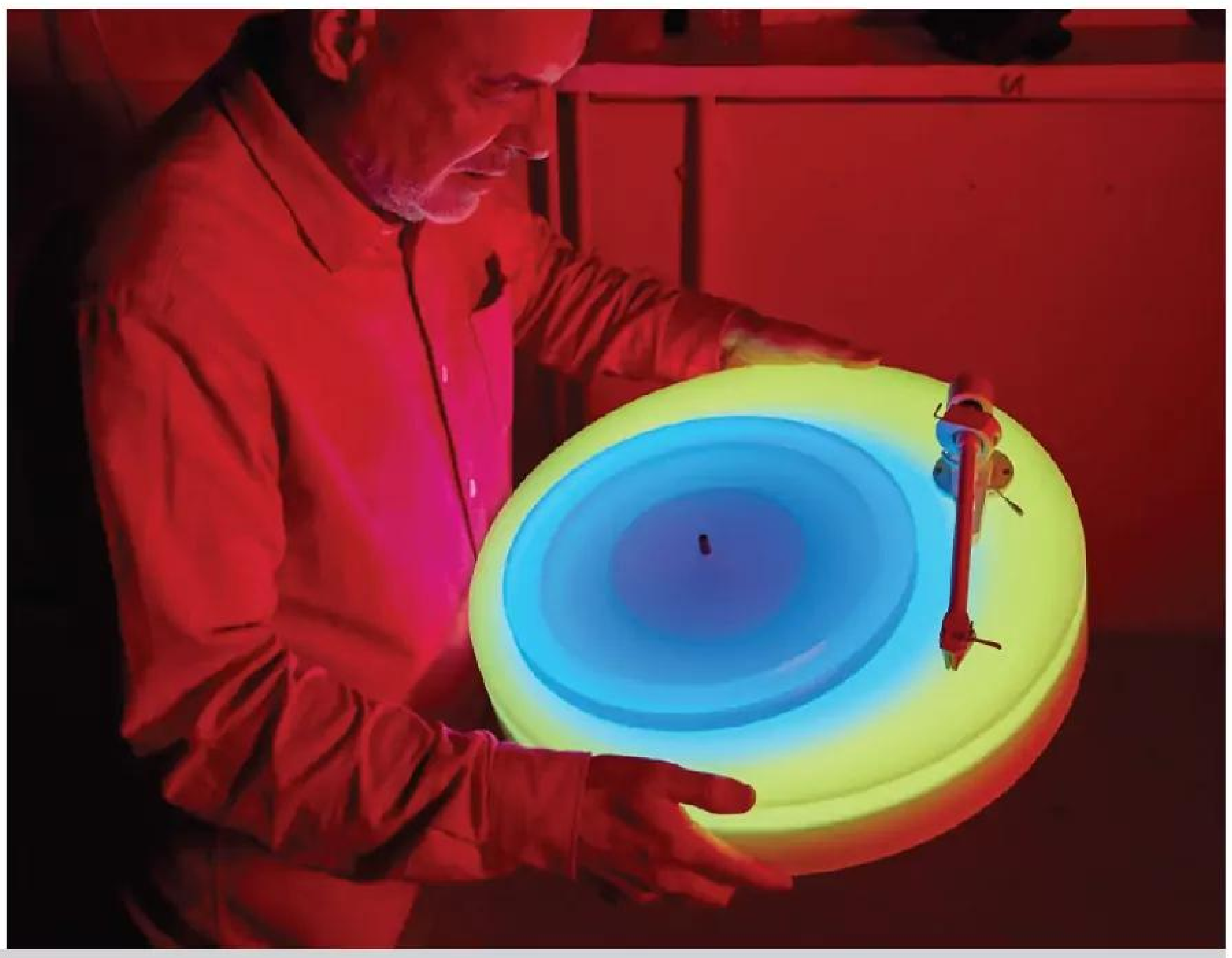
"Out of simplicity, complexity arises. That is for me the most incredible idea of evolution theory and of cybernetics. John Cage once said: 'The function of Art is to imitate Nature in her manner of operation', and that has been an objective for me throughout my working life."

"I use the same sorts of generative processes in music as in painting, based on overlapping unsynchronised cycles. Several overlapping light cycles will keep producing different colour balances and blends — and different shadow formations that slowly evolve and never exactly repeat. The process is simple. The results are complex."

I'm not certain who has manufactured the Turntable II for Eno, though unsurprisingly the design features crucial elements from some of the market's most reputable companies, such as an 8.6-inch aluminium tonearm from Pro-Ject and Ortofon's 2M cartridge. They're both white in colour, no doubt to stand out from the neon colours glowing beneath them.

The belt-drive design is driven by a 15v motor and DC power supply, and can spin at 33 and 45rpm speeds (via an electronic switch). Signature and edition numbers are engraved on the base's side, which brings me to just how limited-edition this model is. While the original was limited to 50 units, 150 Turntable IIs are up for grabs this time.

The Brian Eno Turntable II went on sale on 13th February through London's Paul Stolper Gallery, where it was also displayed for a few weeks. I expect many die-hard Eno fans residing in London would have been forced to see it from the sidelines considering it costs £20,000. That's excluding value-added tax, by the way, and the gallery website notes that 'the price will increase as we sell through the edition'!



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Flagship tech for less

HiFi Rose has a new integrated amplifier in its arsenal and, as is now expected from the Korean brand, it looks quite the stunner. The RA280 retains much of the same technology featured in the flagship RA180, whose intricate fascia turned more than a few heads when it launched two years ago.

The RA280 is a less ornate but no less stylish edition. The feature set has been pared down to a more sensible offering, ditching its big brother's excessive (eight pairs of) speaker terminals and moving-coil compatibility, as well as the frenzy of dials, knobs, switches and sliders adorning the front panel. But don't worry, the more minimal aesthetic of the new model still sports a few tactical controls for volume, input selection, bass and tone adjustment — and two lit-up VU meters still steal the design limelight.

Despite the pared-down philosophy, the RA280 should still "deliver high performance that packs a punch", says HiFi Rose.

Like the flagship, the RA280 features the company's own Class AD amplification technology, here delivering 250 watts of power on tap. As one might guess, this Class AD design purportedly combines the practical advantages of a typical Class D (high efficiency, higher output) with the more natural sound quality you get from traditional Class AB. The brand cites its use of more innovative materials — such as Gallium Nitride field-effect transistors instead of more conventional Silicon FETs — to achieve an accurate amplification stage that sounds more like a "pure analogue" design.

The power supply design — first developed for the RA180 — employs Silicon Carbide FET technology, whose high-voltage support and heat resistance properties allow the integrated to deliver a more efficient, clean output without generating too much heat.

The number of connections has been trimmed down from its flagship sibling, but there are still plenty enough to connect your sources: three pairs of line-level inputs, one pair of balanced XLR inputs, a moving-magnet phono input, and a subwoofer output.

The amplifier itself looks beautifully crafted, and if it's anything like the HiFi Rose components I've seen in the wild, it will feel as though it's been made with tender loving care too. The machine work of the aluminium chassis (available in silver or black), embellishments and dials offer a clean-cut yet traditional aesthetic, while on a practical note the vents on the top panel aid heat dissipation.

The HiFi Rose RA280 integrated amplifier costs $5,399. That's nearly half the price of the flagship RA180, which launched at $9,299 in 2022, and it certainly seems sensible that the Korean brand has brought its tempting hi-fi products down to a relatively lower cost by streamlining its list of features.

For more information, contact Addicted to Audio on 1300 888 602 or visit www.addictedtoaudio.com.au

Classic and contemporary combined

Remember the JBL L75ms all-in-one music system that launched three years ago? It honed the same retro aesthetics as the company's L100 and L82 Classic loudspeakers (the chequered foam grille included) and had the big sound and all-encompassing features to take on the Naim Mu-so. Well, it now has a smaller, more affordable sibling, the L42ms.

The compact all-in-one system offers two sets of analogue stereo inputs (RCA and 3.5mm) as well as HDMI-ARC for hooking it up to your TV. On the music streaming front, there's AirPlay 2 and Google Chromecast for accessing most of the music services out there, as well as Spotify Connect and Tidal Connect. The JBL Premium Audio app is an additional gateway to services such as Amazon Music and Qobuz, plus podcasts and internet radio, and also lets you set up, and then manage, your connections from a single hub. You can tap into music on compatible UPnP network storage devices on local networks, or access a USB drive through the L42ms's USB-A socket.

Roon subscribers will be pleased to know that the L42ms is Roon Ready, while Samsung's 'Smart Things' certification integrates the unit into the ecosystem for seamless connection to Galaxy devices and smart, Samsung-branded TVs and appliances.

Rather cleverly, the JBL comes equipped with a bass contour switch on the rear panel which lets listeners tailor the bass response to account for its placement in a given room or space. Furthermore, the Sound-Field Expansion mode aims to do what it says on the tin, increasing the width and spaciousness of the soundstage for when you want that cinematic, room-filling experience. If you're looking for a versatile, compact alternative to a soundbar, for music and movie playback, this could be it.

It will likely look better than most soundbars, too, thanks to an attractive, curved frontage defined by JBL's iconic Quadrex grille design alongside tapered edges and a choice of black or natural walnut veneer finishes.

The JBL L42ms is available in black or natural walnut, priced at $2,400.

For more information, contact Harman Australia on (02) 9151 0376 or visit www.jbl.com.au

Shaq-sized shoes to fill

Cambridge Audio has whipped the covers off its highly anticipated mid-range music streamer. The CXN100 replaces the acclaimed CXN V2 model, which has a long list of accolades to its name, so you could say the new successor has rather large shoes to fill — Shaquille O'Neal-wearing size 22s perhaps, to put those achievements into perspective.

Since the CXN V2 went out of stock towards the end of last year, I've been eagerly awaiting news of an heir, and the CXN100 certainly seems up to the task of continuing the legacy. It might not look all that different from its predecessor — if it ain't broke… — but Cambridge Audio says the new network player is a "complete mechanical redesign" and "true generational step up in sound quality, functionality and value for money".

An important part of any music streamer — any digital hi-fi product, at that — is its DAC chip, and the CXN100 sports the ESS ES9028Q2M SABRE32, which Cambridge Audio says sounds (and measures) significantly better than the Wolfson WM8740-series silicone found in the old CXN V2. The DAC's timing filter is supposedly so good that Cambridge didn't feel the need to implement a post-DAC filter in the CXN100 and complicate the signal path more than it needed to.

Changes in components, such as capacitors and op-amps, in the post-DAC analogue stage have supposedly led to increased signal-to-noise ratio and reduced distortion, too.

It's not at all surprising that the CXN100 uses the latest (fourth) generation of Cambridge's StreamMagic module, which is also found in the company's new budget MXN10 player and Evo 75 and Evo 150 streaming amplifiers, but it is good news for consumers. Onboard is pretty much everything a streaming-savvy audiophile could ask for — Chromecast, AirPlay 2, Bluetooth, UPnP (up to 32-bit/768kHz), Spotify Connect, Tidal Connect and built-in access to Qobuz and Deezer. The CXN100 is also Roon Ready and supports MQA audio and, via MPEG-DASH, high-quality internet radio.

Meanwhile, physical connections span USB-A and USB Type-B (32-bit/768kHz, DSD512), coaxial (24-bit/192kHz) and optical (24-bit/96kHz) inputs, plus optical, coaxial, RCA and XLR outputs.

The only blot on the seemingly otherwise pristine landscape is that Bluetooth support only goes as far as 'vanilla' SBC and AAC, with higher-quality codecs such as aptX and LDAC left off the menu here.

Speaking of menus, they — and playback interfaces — should be more easily visible on the front-panel colour display thanks to its bump in size from 4.3 to 4.8 inches. Generally, however, the CXN V2's spic-and-span physical appearance has been left as is for the CXN100, which in my opinion is no bad thing.

However, some will understandably scorn Cambridge Audio's decision not to include a physical remote in the box this time, though it would no doubt argue that control of such a product will predominantly be on a phone or tablet via the exemplary StreamMagic app. You can purchase one separately, though anyone pairing the CXN100 with a CX Series amplifier (such as the CXA61 or CXA81) and/or the CXC CD transport will get the same remote in either of those boxes anyway.

So will Cambridge Audio remain king of the mid-market streamer hill with its latest CXN100? Considering the solid foundations from which it has been built, I certainly wouldn't bet against it.

For more information, contact BusiSoft AV on (03) 9810 2900 or visit www.busisoft.com.au

Mono power in miniature footprint

Less than a year after it launched the $34,999, 800-watt AW 800 M mono amplifier, Norway's Electrocompaniet has launched a more affordable, less powerful variant that is much easier to house.

The logically named AW 300 M can deliver 300 watts of power into eight ohms (or 600 into four; 1,000 into two) and is half the weight and width of its pricier sibling, making it easier to accommodate… and lift. We're talking a chassis that is just 21cm wide, 29cm tall and 48cm deep, which is pretty impressive considering the power claims. But while the AW 800 M could switch between mono, stereo and bi-amping operating modes, the new model is mono only.

Like the flagship powerhouse, the AW 300 M is based on a familiar Electrocompaniet design, with a direct-coupled, high open-loop bandwidth topology that the Scandinavain company says has a high slew rate (140 volts per microsecond) and high-bandwidth amplifier stages, "setting new industry standards for audio excellence".

Also flying that particular performance-enhancing flag is an all-new output stage that has been designed to shield the input and driver stages from the load and consequently simplify the workload of the feedback system. An 800VA toroidal transformer, upgraded wire gauge transformer, and magnetic and electrostatic shielding have been implemented, while the power supply has also been updated.

The Electrocompaniet AW 300 M is available now and costs $46,500 per pair.

For more information, contact Audio Dynamics on (03) 9882 0372 or visit www.audiodynamics.com.au

System strip-down

It's fair to say that KEF's wireless speaker systems have been a marked success. They neatly pack in source connectivity, amplification and extensive streaming features into a pair of active speakers that look, sound and perform brilliantly. The LSX II and more premium LS50 Wireless II are convincing, versatile all-in-one (or rather, all-in-two) alternatives to a traditional hi-fi separates system, while the high-end LS60 Wireless floorstanding system takes that concept to a whole new performance level (and price point).

In light of the success of the compact, desktop-friendly LSX II, KEF has now launched a streamlined and, most importantly, cheaper version: the KEF LSX II LT.

You have to look closely to spot the differences between the two. The LSX II LT is near-identical to the LSX II, mirroring its design and dimensions and even using the same driver, amplification and streaming module. KEF says the sound performance should be exactly the same too.

To break that down, the LSX II LT uses KEF's 11th generation Uni-Q driver with the distinctive tangerine waveguide. This is a fully active speaker system, with an amplifier behind each driver in each channel, offering a total of 200 watts of power (again, the very same quoted for the LSX II).

Streaming support is just as comprehensive as well: there's UPnP for playing music stored on your network, AirPlay 2, Google Chromecast, Tidal Connect and Spotify Connect. Amazon Music, Qobuz and Deezer are also supported, as is internet radio, and it's capable of playing high-resolution music files up to 24-bit/384kHz PCM and DSD128. Bluetooth 5.0 is onboard — up from the LSX II's Bluetooth 4.2. You can control playback, volume and room EQ DSP features using the KEF Connect app for Android and iOS devices.

Physical inputs are present once again, albeit in a slightly different configuration this time. You still get an HDMI ARC input, an optical input and a USB-C input for plugging in a variety of sources, whether that's your TV, computer, CD player or games console. If you want more bass, there is a dedicated subwoofer output too.

Where KEF has been able to cut costs and offer the LSX II LT at a lower price compared with the LSX II is with the omission of a few features — Roon Ready support, an analogue aux input and, perhaps most significantly, the wireless link between the two speaker units, which now requires a cable connection.

On that last omission, only one speaker needs to be connected to the mains here (unlike both speaker units with the LSX II), with the primary unit powering the secondary speaker using a three-metre interspeaker cable between the two. A longer, eight-metre interspeaker cable is also available to buy separately if you require more flexible positioning of the speakers.

One visual change, too, is that the LSX II LT loses the luxury cloth covering element of the LSX II's cabinet; the new LT model sports a smooth finish all over and is available in three new colourways — Graphite Grey, Stone White and Sage Green.

So, that all-important new price point: the LSX II LT costs $1,695 — a good few hundred dollars less than the LSX II at $2,195. If the LSX II LT really does deliver the same superb sonic performance that KEF is promising at a cheaper price point, those looking for a neat, affordable setup could be in for a real treat.

For more information, contact Advance Audio on (02) 9561 0799 or visit www.advanceaudio.com.au

"A new standard in audio amplification"

Linn has announced a new flagship mono power amplifier that it says can 'drive any given speaker optimally... under any conditions'. Quite the claim, eh?

The Klimax Solo 800 is the Scottish company's first large, passively cooled mono model, taking the reigns as the amplifier range-topper from the much more compact Klimax Solo 500 which has been in Linn's lineup since the late 90s. But whereas that relative veteran can offer 500 watts of power into four ohms, the new Klimax Solo 800 is capable of delivering 800 watts (or 400W at eight ohms, or 1.2kW into two ohms).

Linn is confident that the Solo 800 'measurably outperforms its larger rivals', with CEO Gilad Tiefenbrun claiming that its "distortion and noise measurements are lower than anything the industry has seen".

Tiefenbrun says the goal was to set a new standard in audio amplification, and to that end the Solo 800 benefits from the company's latest developments in analogue and digital technology.

The Class A/B amplifier utilises Linn's Adaptive Bias Control technology, which debuted in the 360 speaker system announced last year. It essentially works to optimise, dynamically and in real-time, the ideal bias current for each of the Solo 800's sixteen output transistors by measuring, sampling and digitising the current fed to them, to eliminate distortion and ensure optimum performance.

Linn says it has chosen only the best transistors available, with the quality of the array allowing for the Solo 800's output impedance to be divided by eight, thus allowing it to drive even the largest speakers that present difficult loads, and without any tail-off at high volumes.

Linn has stuck with its favoured switch-mode power supply, though it is implemented here in progressed form. Utopik, as it's called, minimises switching noise and improves efficiency by implementing a circuit that ensures voltage across the power supply switch falls to zero before the switch is thrown.

It would be remiss of us to overlook the Solo 800's aesthetic, not least because of how much it differs from that of previous Linn amplifiers. Compact this 27kg mono amp is not, nor is it quite as minimalist-looking.

As seen on later Linn components such as the Klimax DSM streamer, a jewel-like dial adorns the faceplate (available in black-anodised or natural silver-anodised finishes) to display the amp's status. It's backlit by an array of one hundred LEDs, the brightness of which can be altered in three levels by a switch on the rear panel. As you'd expect, that panel also accommodates RCA and XLR inputs and outputs.

The Linn Klimax Solo 800 is available now, priced $76,995.

For more information, contact Advance Audio Australia on (02) 9561 0799 or visit www.advanceaudio.com.au

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40th-anniversary extravagance

Wowee — Sonus faber has burst out of the 2024 starting blocks with what could be the most ambitious loudspeaker system we'll see all year.

Kicking off its 40th-birthday celebrations with suitable Kate Moss extravagance (she partied Glasto-style for four days with 150 guests… not bad!), the Italian brand has launched a Suprema system consisting of two main speakers, two subwoofers and an electronic crossover, priced at $1,400,000.

Got back on your chair? Let's dive into the details…

Sonus faber says Suprema is undoubtedly its "most ambitious project to date", which is saying something considering its catalogue isn't short of five-figure creations (just take a look at the Il Cremonese EX3ME…) But despite its lofty aspirations, the system is still very obviously 'Sonus faber'. The Suprema's tower speakers sport that familiar lute shape which, like other of the company's high-end models, are nods to the first Guarneri violins of the Cremona region near which the brand is based. Multi-layer wood is used for the side panels to create the illusion of 'wings' via a special 3D bending shape, and a leather front panel has been created in collaboration with renowned luxury furniture brand Poltrona Frau.

The subwoofers, meanwhile, follow an elliptical shape in honour of the also-heritage Stradivari violin (also shared by the Sonus faber Stradivari speakers), allowing them to accommodate large transducers. Last but not least, the electronic crossover is housed in a rectangular chassis that, like the system, comes in your choice of red, graphite or walnut finishes.

The speakers themselves are 4.5-way designs featuring eight front-firing speakers in addition to two backfiring drivers, of which plenty of newness can be found. For one, Sonus faber has created an all-new Camila midrange with a pulp diaphragm, which has a non-circular membrane and isn't masked by suspensions, to ensure maximum resolution and reduce resonances. Behind it is a new dual-drive magnet with an organic basket (previously used for the Stradivari woofers) for controlling airflow.

The midrange drivers are paired with a new mid-tweeter and super tweeter with treated silk dome, together arranged in a "unique dedicated internal volume" that has been designed for each driver's optimal performance. The chamber and its inner walls maintain an organic shape and are made entirely of recycled cork, too, making Sonus faber the first to use a natural and sustainable material to create acoustic volume.

The subwoofer system, separate so that it can perform optimally regardless of the position of the speakers, uses two 38cm transducers carbon fiber membranes and a neodymium magnet motor system for undistorted pressures up to 16hz. And the speakers are decoupled from the ground using a mechanism produced in partnership with Canadian isolation specialist IsoAcoustics, too.

As for the external electronic crossover, it is a dual mono and fully balanced design with all phase cutting and control circuits purely analogue, and ultimately handles the integration between the speakers and subwoofers. Sonus faber says the Suprema's configuration system "aims to extend beyond the conventional limits of the frequency band coverage", and that the crossover filters, partially visible on the sides of the main column, use the best electroacoustic configurations experienced by the R&D team in the last decade.

OK so we've already given away the sky-high price, but the good news is that you can spend $100,000 less to get the Suprema… if you opt for just one subwoofer. Wood, aluminium and carbon fibre customisations are available on request, and installation is included with both the Suprema 2.1 and Suprema 2.2 configurations.

For more information, contact Synergy Audio Visual on (03) 9459 7474 or visit www.synergyaudio.com

aptX Lossless listening

Sennheiser made quite the splash at January's CES show, launching not one but three new products — including the latest member of its iconic Momentum range.

The Momentum True Wireless 4 wireless earbuds ($499.95) replace the excellent True Wireless 3, building on their skillset with "more than a dozen enhancements" alongside "larger-than-life sound".

Those enhancements come courtesy of Qualcomm's S5 Sound Gen 2 chip and associated Snapdragon Sound Technology for aptX Lossless codec support and ultra-low latency capabilities. There's also support for Bluetooth 5.4 and Auracast, the promise of improved ANC, and an above-par battery life offering 7.5 hours of listening on a single charge, extending to 30 hours with the charging case.

Arriving alongside them are the new Accentum Plus wireless over-ears ($399.95), designed as a step up from the mid-range Accentum Wireless. These Bluetooth 5.2-enabled headphones aim to "emphasise outstanding sound quality, battery life and versatile connectivity" all while supporting the aptX Adaptive codec. They also offer up to 50 hours of listening per charge, as well as touch controls on the earcups and adaptive ANC for adjusting noise cancelling depending on the environment.

The final member of the new trio is arguably the most interesting… for fitness fiends anyway. The new (and unusually premium for their kind) Momentum Sport wireless earbuds ($529.95) promise "pulse-pounding Sennheiser sound" while integrating both heart rate and body rate sensors that can send data directly to your favourite health monitoring and fitness apps and trackers. You'll even be able to use the Polar Flow app to get insight into your own data analytics and biological metrics. Cool stuff.

To minimise noise from things like footsteps and heavy breathing, the sporty buds' acoustic chamber allows for environmental awareness without distractions. Noise cancellation is present and correct with transparency and anti-wind modes onboard. They're IP55 water-resistant and shock-proof for greater durability, too, with total battery life an Iron Man-friendly 24 hours.

For more information, contact Sennheiser Australia on 1800 648 628 or visit https://en-au.sennheiser.com/

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Sonus faber Duetto

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Take a pair of Italian-designed speakers and add amplifiers, network streaming and external inputs including HDMI, and hey presto — you have a complete hi-fi and TV system in just two boxes!

When I first visited Sonus faber's product page for the Duetto (it has since changed), it was led by an artily-faded image of a young couple facing a pair of these luxurious-looking speakers on their dedicated stands, flanking a leafy bay window. The couple are touching, apparently held rapt by the music, although they might possibly have just nodded off. Anyway, superimposed over all this is a block of colour with the company's first statement about the Duetto which read: *'The sound of Sonus faber, now wireless.'*

And really, that is so much the story here in a nutshell that I was worried I might find little more to add. Everything else is just adding detail to that statement.

Although that assumes you know what they mean by 'the sound of Sonus faber', of course, and there's quite the tale of Italianate artisan craftspersonship behind that.

And then there's that wireless bit. Wireless speakers are pretty exciting in themselves: a potential all-in-one system solution since you get the amps and streaming all built into the speaker boxes. The word 'wireless' means they can receive signals through the air without cables, of course. But wireless is a generic term, not telling you what technologies are available for wireless music transmission, nor crucially how the speakers talk to each other, which is equally important in terms of the final quality available from the system.

So does wireless here mean Bluetooth? Or perhaps wi-fi?

Well, for some of the stuff here, wireless means something else entirely, something *new* for consumer hi-fi products. Between the two speakers, the Duetto uses Ultra WideBand

transmission — UWB. And that's their most exciting 'wireless' thing of all.

BUILD & DESIGN

Before we get all gooey over UWB, however, let's get hands-on with the physical Duetto to see how the system uses more conventional Bluetooth and wi-fi to access your music, before using that UWB to spread it around.

It's almost redundant to say that these are beautiful loudspeakers, because they're Sonus fabers; the company doesn't make anything else. Up in the rarefied air of Arcugnano, a town in the province of Vicenza, Veneto, north-eastern Italy (also home to Bertagni, Italy's oldest filled-pasta producer), Sonus faber has a four-decade history of making artisan-style speakers back to the early designs of Franco Serblin. Its factory is a wondrous mix of traditional skills and new technologies, where over the last decade or so the brand has been part of first the Fine Sounds Group and then, since 2015, the McIntosh Group, alongside Sumiko cartridges and McIntosh itself. But this has not dented Sonus faber's Italian approach; indeed the wider funds may have helped this. For example, in 2021 when it acquired De Santi Woodmaker, a family-run carpentry business with which the company had already enjoyed a 35-year collaboration, bringing these "two leading 'Made in Italy' realities" under the same roof.

These skills, this legacy, are evident in the appearance of the Duetto even before you plug the speakers up and start playing. One common characteristic of the brand is what Sonus faber calls a 'lute-shaped' cross-section, here the shape of the leather-covered top panel. This shape is said to serve both aesthetic and acoustic purposes, minimising internal standing waves and resonances within the cabinet, reducing coloration and distortion. The cabinet and custom-designed heatsink "guarantee timbre and musicality", says the company, which eschews mere neutrality in favour of its "signature Natural Sound".

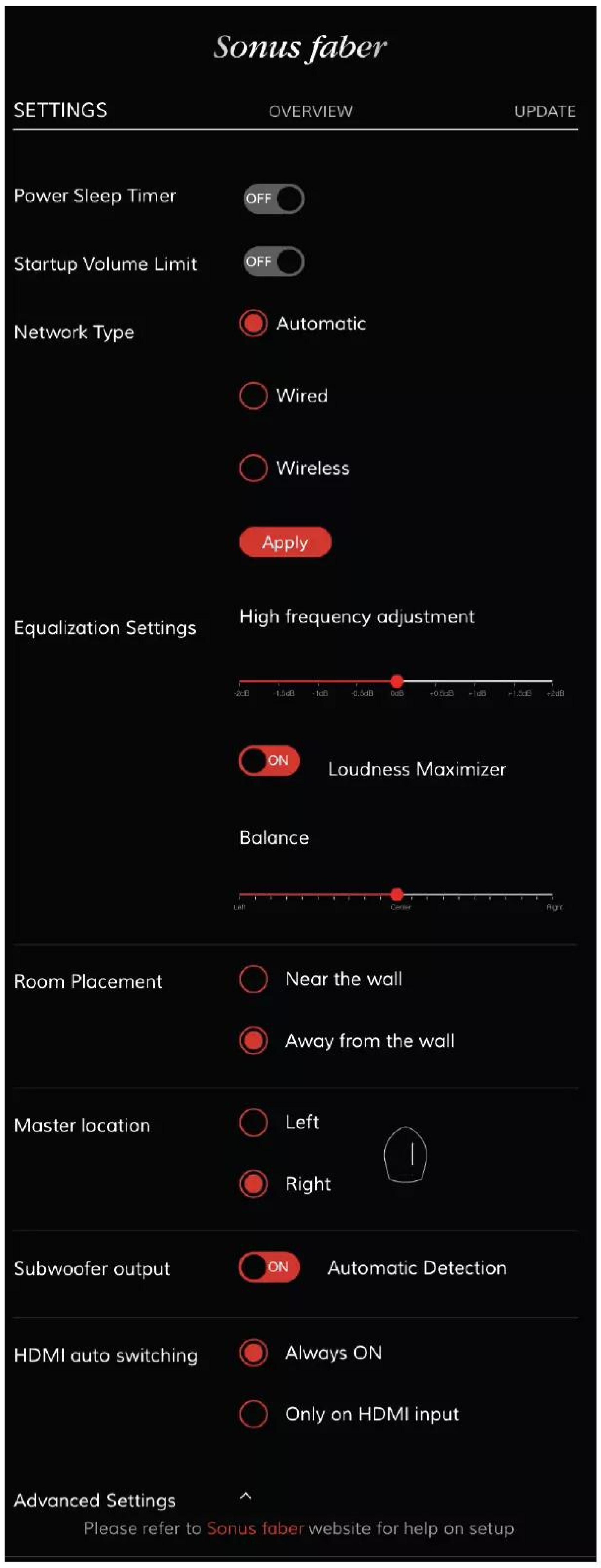
There are two finishes: Walnut (previous page) and Graphite (following page). The review sample was in the gorgeous walnut finish, on which the wood veneers have been laid to put the grains at unusual opposing 45-degree angles, so meeting at 90 degrees above and below the diamond-shaped speaker baffle, the bottom of which the grain tracks near perfectly. There are various warnings supplied about not cleaning the veneers and the leather top with aggressive chemical products (these apparently include lemon juice and wine); don't use any cleaning products, is the advice, other than Sonus faber's own Cleaning Kit available from distributors. Really, a regular wipe with a soft dry cloth should be enough.

The black combined diamond baffle is something I recall from a Sonus faber custom installation model, the PW-662, but it also mimics the combined baffles for tweeter and midrange on some of the company's highest speakers, such as the Aida, Lilium and recent La Cremonese, though those use the company's 'Arrow Point' DAD tweeter.

The two drivers here are lower in level but still designed in-house. Silk domes are considered a hallmark of Sonus faber's 'Natural Sound', the 28mm tweeter here backed by a ferrite magnet system with a copper cap on the pole. When the removable grilles are off you can see the dedicated waveguide in front of the tweeter, which aims for a broad dispersion pattern.

The mid/woofers are 133mm long-excursion paper-pulp cones, here with neodymium magnet systems with copper caps and aluminium rings, housed within the brand's new 'Organic' basket, designed to avoid symmetrical patterns and allow non-disruptive airflow around the driver.

These are active speakers, of course, so there are amplifiers inside, four in total: one for each driver, all mounted within the crossover section. Each tweeter has a 100W (no envelope stated) Class-AB amplifier, and each mid-woofer a 250W Class-D amplifier. To dissipate heat there's a large ribbed heatsink that surrounds the port and dominates the rears of the speakers, so much so on the 'Master' speaker that you don't initially see where the connections could all be. The answer is that they're pretty much underneath.



This is not an app but rather browser-based access to the Duetto's settings. An app should follow, adding input selection to the control here of EQ and settings not available on the remote.

The Duettos do have optional custom-designed stands; I didn't have these for review but they should make the most of the speakers in terms of firm support as well as allow for neat cable management.

I should note that while Sonus faber's higher-end models are fully made in Italy, the Duetto system is one of its more mass-market products and proclaim itself to be 'Designed in Italy; made in China'.

CONTROL AND INPUTS

As I have alluded to, the two speakers here are not the same: one is a 'Master', the other a 'Satellite' (such pairs used to be 'Master' and 'Slave', but it would be a foolish company indeed which retained that nomenclature today).

The Master has all the inputs to the rear/base, while its leather top panel is sliced through with control strips and buttons, which are collectively

Tucked below the rear of the Master speaker is the connections bay with Ethernet (and wi-fi), HDMI ARC, optical and phono/line-level inputs, plus a subwoofer output and USB-A socket.

called the 'Senso' system, inherited from the Omnia, the company's award-winning one-box wireless speaker. I hadn't initially realised the very close connection between the Omnia and these Duettos — same remote control, the same Senso controlling much of the streaming system. And that's no bad thing since the Omnia is wonderful both in terms of its abilities and performance.

Still, I have found that the Senso system can be a little less than instantly intuitive in use. The small front strip is touch-sensitive and changes colour to indicate the input. It can be used with the buttons on either side to control volume, input selection, play/pause and other functions.

The longer vertical strips are just LED Feedback Strips, more pretty than useful in my view, although during set-up the central strip animates to show a successful network connection, and flashes to show pairing between speakers. A leftward ripple indicates an update in progress (software updates should happen automatically, around 2am GMT apparently, so they might interrupt your lunchtime listening here); there is rightward rippling during a reset. The main strips go dark when the Duettos are muted and the small front strip flashes in white.

The trouble with colour being the indicator for input is the lack of other feedback on what is selected. Taking a quick tour of the inputs round the back, there's HDMI (strip lights up orange), optical input (magenta) and an analogue RCA pair (pink) which can play from a line input or, at the flick of a selector switch, a record player equipped with a moving-magnet (MM) cartridge.

Then there's streaming. The control strip goes blue for (you guessed it) Bluetooth, white for streaming and specifically AirPlay, yellow for Chromecast, green for Spotify Connect, light blue for Tidal (also in direct Tidal Connect form), and finally purple when fed by Roon (a pricey but great music management platform).

Not quite finally purple, actually, because there's a whole section in the manual entitled 'I have a red control bar'. This is a colour you don't want to see since it indicates a warning or error, and the manual section is there to help you work out what's wrong.

Do you need to learn all these colours? I was going to say yes, or at least learn the ones you're going to use, because there's no other display to tell you what input is selected, nor does the remote control offer direct input selection. There's handy browser access to some controls, but not input selection. We have a feeling the inputs might be intended to auto-trigger (to thereby avoid selection altogether), but if that was the plan, it didn't happen much.

Voice control? Siri could control AirPlay playback from an iOS device, and Google for Chromecast. But no voice control of the Duetto system allows input selection.

So if you want the HDMI input, you have to push the remote's input button repeatedly until you see the top strip going orange — a tedious process, and from low seating like a sofa you may not be able to see the speaker's top light changing colour, so you'll have to stand up as well.

However, help should be on the way. This will, I gather, be solved by an app that Sonus faber shows on its website, but that isn't ready yet, perhaps because of my privilege of an early pair to review. Going by what's on the website, it seems this app will include clear input selection, which will be very helpful indeed.

Also round the back is a line-level subwoofer output, an Ethernet socket for networking in preference to the Duetto's inclusion of either 2.4GHz or 5GHz wi-fi, and a few press-stud buttons which can be used to switch the left/right positions of the Master-Satellite, and to pair the speakers.

ULTRA WIDEBAND ARRIVES

So you've already read about two types of wireless connection here — firstly Bluetooth for music streaming (which supports SBC, AAC, aptX and aptX HD codecs), and secondly wi-fi, which links to your home network and thereby to the internet, allowing various types of music streaming to take place.

A third type of wireless connection takes care of communications between the Master and Satellite speakers, and it is Ultra WideBand, a potentially game-changing wireless technology that I'm seeing in a consumer hi-fi context for the first time here.

This will be interesting if you happen to live in Indonesia, Russia, Ukraine or one of various Turkic countries which don't allow any use of UWB, and require it to be turned off even for location finding in a smartphone.

The rest of us can enjoy the first UWB implementation for consumer hi-fi to have launched. The chipset used here comes from Canada's Spark Microsystems, and the breadth of transmission allows UWB to use low-level but carefully timed frames of information, delivered with absolute minimal latency. That need for careful timing synchronisation is currently a key development area for UWB in audio.

One day we may see UWB taking on Bluetooth to deliver genuine high-res wireless headphones; Spark's chipset can supposedly handle uncompressed 24-bit/96kHz. For the Duetto system, Spark is simply used to establish a strong, fast and robust wireless link between the two speakers — robust because UWB should not be affected by heavier wi-fi traffic, Bluetooth bursts, or anything else. UWB data passes freely through all such spectra.

Since it's my first time with UWB, I was interested to note the warnings: *'The passage of people or the presence of water between the Duetto units could compromise their wireless transmission.'* Take care positioning that aquarium, then! I knew that bodies could block UWB, as it's a key issue that will need to be overcome for potential UWB headphone use.

SET UP

I'd seen the pictures, but until I unboxed the Duetto speakers I hadn't clocked the extreme tapering to their rear; that lute cross-section forms a Gothic arch to the back with a specific point to its apex. That makes the back of the speakers most unusual, with the heatsinks curving away from their spine.

It's weird to find no speaker terminals to the rear, but of course this is an active speaker that doesn't require them. Yet you can't see any other connections either — they're all secreted away in quite a large hollow section actually underneath at the rear.

On the Satellite speaker this space has just a downfacing mains socket and a pairing button. On the Master this space also hosts all the other connectors, and the space available is only just large enough, especially if you have a thick HDMI cable snaking in there. But the slot gap to the rear assists cable management, and of course if you opt for Sonus faber's dedicated stands, those cables can pass down to the floor that way. As for positioning, Sonus faber recommends a classic fully toed-in triangle of a minimum two metres,

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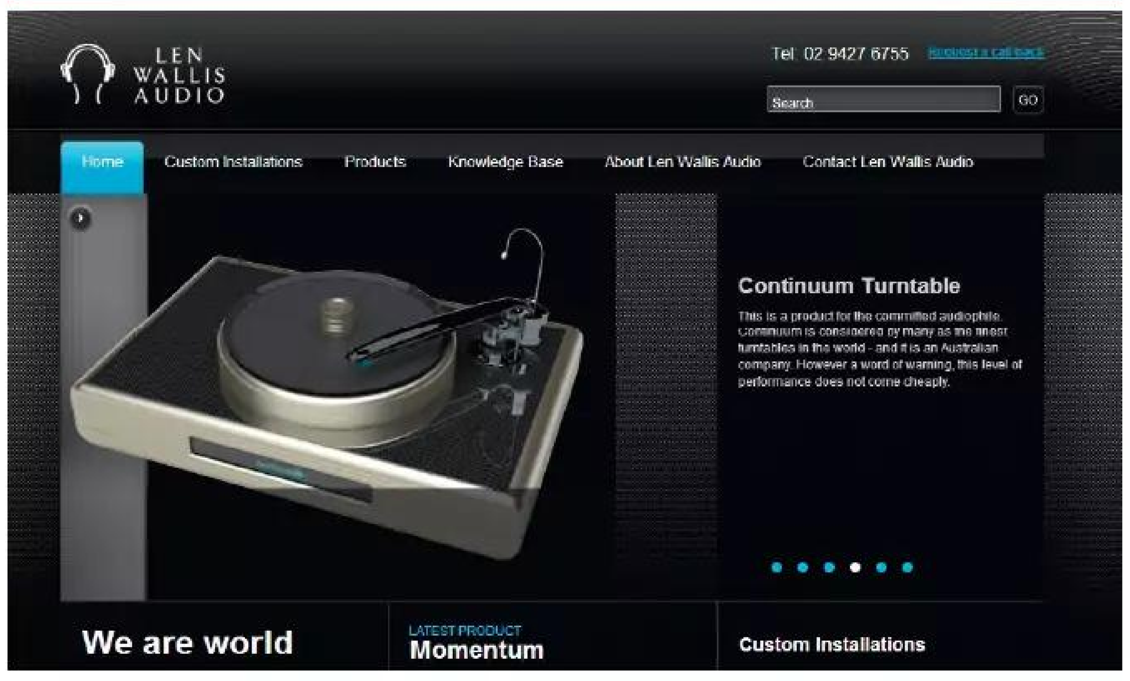

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with at least 50cm of clearance on all sides, including the rear wall.

Having said that, there is a setting available via the Duetto's browser-based setting page (and maybe app-to-come) where you can select a "near the wall" option that tames the bass a tad to adjust for such reflective support. Sonus faber says there should always, however, be at least 10cm behind them.

By default the Master unit is configured to be the right-side speaker, which was convenient for me, but it's easy to switch them around using the button on the back of the Master. Another button pairs them, making that UWB connection — and I actually did need to pair them; they didn't arrive pre-paired. Note that the Master speaker's central LED strip flashes (rather briefly) when the pairing is complete.

You can connect them to your home network in any of several ways. An Ethernet cable is the easiest, fastest and most reliable method. But if you're using an Apple phone or tablet, you can set them up on the wi-fi as an AirPlay speaker, or use the Home app to add them to your home. If you're more of an Android user, you can use Google Home to add them and make them available for Chromecast. Again, both 2.4GHz and 5GHz wi-fi bands are supported.

I set them up as an AirPlay speaker; my iPhone initially told me this process had failed, but it hadn't — the speakers were clearly now online and receiving streams from my iPhone.

With active speakers comes power, but with power comes heat. The Duettos' rear panels wrap huge heatsinks around the rear ports.

I also connected their HDMI socket to my 75-inch TV's ARC-equipped input and then positioned them flanking the screen. This HDMI input makes the Duetto ideal as a TV and movie sound system, as well as for music. If your TV doesn't support ARC, you could always move to the optical digital connection instead, or go analogue as your last resort.

I was pleased to see a QR code in the manual to access the web-based settings page, because the previous Sonus faber smart product, the Omnia all-in-one speaker, had a 'secret' unmentioned web-based set-up page which I happened to stumble upon and where I found some EQ functions that could be accessed nowhere else. It's the same here but this time better advertised! In addition to setting up the wi-fi connection etc., this web page again has more detailed equalisation settings — there's a high-frequency slider adjusting HF gain from -2dB to +2dB, and a Loudness Maximizer for boosting the bass at low volume levels. There's no way to toggle this on and off via the remote control or the unit's own controls — and, critically, the Loudness is 'on' by default. This web page (and presumably the forthcoming app) is the only place you can change that.

You can also do that "near the wall" room placement if need be, adjust the balance between left and right, and — if using a subwoofer — adjust more complex subwoofer controls over cut-off, gain and delay.

With all my preferred options selected, I left the Duetto on general music and TV duties for a week, before returning to have a critical listen.

LISTENING SESSIONS

All this new technology — the amps and the streaming and the touch controls... it wouldn't matter how good and clever they are if the loudspeaker design on the end of it all were to turn out a dog. That would be quite the surprise from Sonus faber, of course, and thankfully no, the Duetto system is well up to the quality I expect from the company.

Nor did I have to wait a week for it to come on song; only a couple of hours into my listening I was thrilling to the newly remixed and expanded Dylan Budokan concert from 1978, far improved over my grungy vinyl original: the newly-included track *I Threw It All Away* sounded contemporary and powerful through the Duetto, Dylan's vocal clear, crisp and emotive in the centre, backing singers and then saxophone off in the right channel, and plenty of depth and power to support the rest of the band. Two entire new Dylan concerts to listen to! (As if I needed more.)

Peter Gabriel's *And Still (Dark-Side Mix)* is a delicate piece with space and cellos, punctuated by a beautiful central violin motif. Through the Duetto system there was no missing the slightest emphasis in Gabriel's vocals, while I could expand the sense of space by adding volume pretty much as far as I might possibly wish, finding no obvious performance limit requiring me to stop.

This ability to play loud without cracking up proved a boon as my listening days extended. I later moved the Duettos up to a smaller space and positioned them in almost the minimum recommended two-metre triangle, and wow did they gain some energy up there! Tidal Connect served up a 2022 remaster of The Who's *Won't Get Fooled Again*, and after some studio chat the system slammed out the song's arrival in an absolute mirror smash of a soundfield, and didn't let up thereafter, Entwhistle's bass especially solid and nimble in the middle, no overdubbed Daltrey scream but a rogue Moon bash in the re-entry. This was a suitably huge presentation for a huge song, delivering musical moment after moment, including an almost comical runaway *Baba O Riley*-style race to the end.

Another live track with which the Duettos went wild was the remastered live *Dazed and Confused* from Zeppelin's 'The Song Remains The Same'. Digital Zep is rarely as good as vinyl Zep, but this was something else, a massive and heavy presentation with the kick drum thumping so powerfully I had to reach out and touch our nearby subwoofer just to check it hadn't somehow miraculously entered the signal chain, such was the solidity and depth of the sound. It was an extraordinary performance from loudspeakers which are, after all, relatively slim and room-friendly.

The reason I had moved the speakers into a different room was an extended problem in the original room where I had a Samsung TV plugged into them first via HDMI ARC, and then via optical. Either path proved unstable, not dramatically so but with just-audible glitches once every couple of seconds and a clearly audible drop-out every 10 seconds or so. There were other glitches — sometimes a Tidal Connect stream would be initially skewed over to the left speaker, the Master quieter than the Satellite, a balance error which would correct itself to deliver a proper centre after a few minutes; really weird.

Furthermore, things just sounded so much better upstairs that I wondered if those glitches were just the audible bits of a significant data-related quality drop. It's very hard to tell what's going on when a wireless link fails, and even harder if you suspect it of merely underperforming. My glitching issue was duplicated on optical and HDMI inputs, with the skewing thing on Tidal too, so initially I was all for blaming the radical Ultra WideBand transmission system, and all the more so when I found the UWB signal was blocked completely when I left my passive standmounts between the Duettos.

I know that one of my test positions can suffer from a troubled wi-fi environment; I've had other wireless speakers struggle in the same location, though I've never worked out exactly why. But one key point of UWB is that it's supposed to be immune to busy environments. It should get through anything — except water, bodies and,

apparently, unused loudspeakers.

Up in the music room I was using the same cable and same scenario but the Hisense A8KAU TV (and later a TCL Roku TV) instead, and I never heard a glitch again. Things also sounded significantly better. So from that analysis, I might blame the original TV for some compatibility issue, though of course that doesn't explain the Tidal glitches.

There was one very pleasing discovery during this move upstairs — how easy it was to switch the master speaker from being the right to the left. There is a press button on the back to achieve this (and you could check by sweeping the web/app balance control left and right). Then I noticed a simple toggle control in the browser window to do this.

Not only easy to switch, then, but easy also to experiment any time with left-right reversal. All sorts of recordings get reversed before release, or between releases — Led Zeppelin's 'Mothership' compilation for one. Should you know or notice, this software control is far easier than flipping cables; besides, hey, what cables would you flip on a streaming speaker?

And how about that Loudness Maximizer? I found this a difficult call; its effect is not dramatic, and it's supposed to operate primarily to raise bass when playing quietly, which is a good thing. But it can also add a small amount of flab even when listening up at reasonable levels. I was not pounding but certainly turning up *Superstition* by Stevie Wonder on Tidal Connect, and the bass was sounding a little over-rounded — I went to that web page, turned off the Maximizer and the bass was instantly entirely natural, without that tiny sense of being forced. Same with *Born To Run*, same with *Heart of Glass*, same with lots of tracks. It's also useful to turn it off when listening to True Crime TV where the soundtracks have constant low-frequency beds and pulses to ramp up the fear factor. Turning off the Maximizer dropped their insistence levels.

So I repeat what I said when the company's Omnia did the same thing: hiding EQ options somewhere semi-secret is absolutely ridiculous, especially something like a bass boost. Many users won't know their speakers can sound better, or at least more natural. It should be on the remote control. At least the browser access is now in the manual, while hopefully the promised app will make the EQ options more obvious and accessible.

Another thing that might go on the remote would be individual input selection. When I moved on to plugging in a turntable, I was delayed by having to go back to the manual to see what colour input I needed to choose for the analogue line/phono input — pink, that's right. But then, is that current light magenta or pink? Hard to tell. Again, the imminent app's input selection will make this far easier.

In addition, attaching anything to the Duetto system requires up-ending it entirely to get at the connections bay, and it might be all too easy to finger a tweeter or driver when holding the speakers upside down. I found the connections to be best made by flipping the Master completely onto its leather top (put down a cloth first). It's still not easy getting in a thick HDMI cable and potentially three analogue leads (fixing the turntable earth pin is particularly fiddly), and I twice reset the speaker accidentally while reaching by 'feel' for the phono/line selector — the reset button is right next to it and requires only a momentary touch to activate. And the reset then requires re-pairing the two speakers, with another button press under each speaker.

Still, this was all instantly successful, so finally I could hear the playback of Dylan's 'Highway 61 Revisited', a 45rpm Mobile Fidelity pressing (pre-DSD era, I think, but sounding none the worse for it either way). Side three rollicked along, the Duettos gifting a hugely full delivery to Harvey Brook's pounding bass guitar on the title track, and with all the whistles and slide guitar punctuating the mix I've never enjoyed it more.

That's not an album to judge soundstaging, however, because it's mono. So I loaded the 2020 2-LP issue of 'Koyaanisqatsi' (no. 892 of 1,500 numbered copies, by the way), to see what the system would make of the mournful Glass organ opening track, especially once the biggest organ pipes had been pulled out at the end of the first track.

Quite a lot, is the answer — again the Duetto speakers were able to deliver a resonance beyond expectation for their size (Loudness Maximizer off). The rest of the LP showed their ability to deliver soundstage width — a ping-pong mix for pulses from the brass while the percussion, horns and strings get a traditional orchestral spread with clear depth to the back,

> "The Duettos gifted a huge delivery to Harvey Brook's pounding bass guitar, and with all the whistles and slide guitar punctuating the mix I've never enjoyed it more..."

'Senso' control: the 'lute-shaped' leather top panel of the Master speaker is slit through with three large indicator strips plus the colour-changing touch strip and dots near the front.

and such edgy delivery of high-frequency organ stabs on *Organic* that I marvelled at the frequency range of this clean piece of vinyl through this highly capable system.

So the Duetto speakers and a good turntable are all you need to make such a capable and thrilling vinyl system.

While I thought the Duetto's bass performance remarkable, if it's not quite getting to the bottom of your latest CloZee Future Bass collection, you could always run an active subwoofer from the master's RCA socket. I tried this when using the Duettos in one of my TV systems, where I spent several weeks listening to all TV and movies through them. They are a stunning pair of active speakers for this purpose, and they really don't need a subwoofer. While the sub and Duetto speakers did prove an impressive combination when rumbling away the SFX in AppleTV+'s *Foundation*, say, keeping the subwoofer permanently in circuit made network news stings rather too exciting in their bursts of energy, and ramped the intensity of tension in *The Curse Of Oak Island* to anxiety-inducing levels.

Ultimately, I preferred the Duettos playing alone. Their balance for TV was great for either daytime speech or night-time drama; the bass levels suit movie soundtracks perfectly, and of course they are ready and waiting with delicious music whenever you turn the TV off.

Talking of which, the Duetto system does encourage you to turn the TV off, and not only to hear their music. When you have a TV connected via HDMI, turning off the TV will automatically turn off the speakers at the same time (via CEC, HDMI's built-in control system), just as turning on the TV will also turn on the speakers and (usually) pre-select the HDMI input.

One scenario glitch, however — if you walk away or leave the TV silent, the Duettos power down on their own after not very long. Do not then power the speakers back up! For some reason they then don't know where they are. Instead, turn off the TV, pause a moment and then power it back up again, thereby waking the Duettos up together again. This may happen all the time to those who attach the speakers via HDMI to a desktop computer monitor, where audio will not be constant. To fix this, it might be worth Sonus faber adding an option to defeat the Duetto's timed auto-standby, perhaps via some later firmware update.

Other than that, the only issue I experienced was that early glitching in the first room, which might have been a TV issue, even though weird balance issues were occurring on Tidal streams too. Yet in the second half of my testing, the glitching did not reoccur. I mention it mainly in case it's common during set-up, and other users may be reassured that I experienced this only temporarily. Was the UWB finding its path and settling in? It doesn't seem likely; I asked my contacts at Spark Microsystems in Canada, providers of the UWB technology here, for its opinion.

"UWB operates in the 3-9GHz spectrum," the company replied. "Because of physics, signals in this range of frequencies are prone to blocks. Non-line-of-sight performance will vary depending on location and conditions. Water and body (which is mostly water!) are good examples of strong blocks."

However, Spark also pointed out that the many reflections in a room typically help with body blocks, enabling the signal to reach the receiver from various angles.

Hence UWB should work well as a short-range communication channel with excellent bandwidth and very low latency, says Spark. "These are enablers to the Sonus faber product because they allow transmission of high-quality uncompressed audio, eliminating latencies."

It's worth noting that Spark doesn't recommend UWB through walls: "While the signal will travel through simple sheetrock walls, we do not recommend extending the channel to multiple rooms," it told me, also noting that regulatory requirements limit transmit power, and this limits range.

So while I had a perfect experience in one room, the issues elsewhere with blocking mean that to my mind, the merits of the UWB link were not entirely proven here.

It succeeded in one important way, however — latency, or lack of it. Wireless speakers that are not connected by a cable often cause a small delay through transmission, which can show up as sync issues when watching video. Not only did I experience no sync issues with the Duetto, I didn't even think about this issue, which is very rare. UWB's very low latency might be doing some of the heavy lifting there.

I was a little divided on the remote control. It's easy to mislay, being small and entirely black. You have to point it quite tightly at the bottom of the speaker, and the buttons are a bit spongy to use: you must firmly press the centre of each button where the actual stem sits. And as noted, I'd gladly accept a larger size of remote with room for dedicated buttons to select at least the three physical inputs and the EQ options.

Yet the missus announced this was her favourite remote control in the whole house, because the buttons are so flat and easy to wipe clean — a worthy point in these days of viral particles. So let's call that evens. I'll pass over how she characterised the diagonal speaker baffles, for which the Duetto comes with removable fabric grilles, also diamond-shaped. I prefer the look with the grilles off.

CONCLUSION

The Duetto speakers sound fantastic, and they nail the active speaker brief in a highly consumer-friendly way — so simple that the Duetto will appeal to similar buyers as the all-in-one Omnia as the simplest of hi-fi systems, here two boxes instead of one, and delivering ease of use (once the app arrives with input selection and EQ) wedded to a quality of sound that is not only real hi-fi but also real value — yes, even up at nearly $7,000, considering you get the amps and streaming all included with the speakers.

What your money gets you is a real hi-fi system capable of a powerful entertainment combination, in a scenario kept simple to connect and operate. In fact, you might say that these Duetto speakers achieve the sound of Sonus faber, but now wireless. ***Jez Ford***

TECH SPECS & CONTACT

Brand: Sonus faber
Model: Duetto
RRP: $6,995
Design: Two-way vented box
Inputs: RCA line/phono, optical digital, HDMI eARC/ARC, Ethernet, wi-fi, AirPlay 2, Chromecast, Spotify Connect, Tidal Connect, Bluetooth (SBC, AAC, aptX HD), Roon
Outputs: Subwoofer
Drivers: 28mm silk-dome tweeter, 133mm long-excursion woofer
Crossover: 1900Hz
Quoted frequency response: 37Hz–30kHz
Amplifiers: 2 x 100W Class AB, 2 x 250W Class D (no envelopes stated)
Dimensions (hwd): 210 x 340 x 280mm (108cm tall on dedicated stands)
Weight: 6.8kg (Master); 6.45kg (Satellite)
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How to build your own digital music library

While streaming services deliver music-listening convenience by the bucket load, there's a lot to be said for taking the time to build your own digital music collection.

Whether meagre artist payouts or a desire for better sound are fuelling your move, or you simply find yourself forking out a monthly subscription for music you already have shoved in a loft somewhere, there are plenty of reasons why a digital music collection makes perfect sense.

But if the last time you built a digital music library was on an old iPod shuffle with some — ahem — questionably sourced MP3s, you may be wondering how you go about doing it, what kit you'll need and the ways you can listen. Thankfully, this handy guide should help you get your own digital music system up and running.

Why should you set one up?

So why might you want to build one at home in the first place? Firstly, at-home digital music libraries offer a more permanent alternative to music streaming services. Once one is set up, there are no additional fees to pay or ongoing monthly subscriptions, nor is there the chance that songs you love might simply disappear as licensing agreements change.

Not just that, but you can feel happy in the knowledge that you have supported the artists you love by doing exactly what most of them would want you to do, which is to buy — and not stream — their music.

It's also a particularly good idea if you already have an extensive "owned" music collection — be that a physical one in vinyl or CDs that you'd like to dig out of storage boxes and make use of, or digital files, bought, downloaded and stored, in the days when iTunes was king. Of course, with high-resolution music all the more accessible now, it also opens up the opportunity for better audio quality and broader file choice, which will be important if you have a serious hi-fi system you want to listen to it through.

What do you need?

To get your digital music library off the ground, the first thing you're going to need is a solid home network. The router you got from your internet service provider may well be perfectly adequate, but more important is the ability to hardwire your

The $2,580 Naim Uniti Core is a serious music server with a built-in CD ripper and configurable hard drive that can store up to 100,000 tracks.

router to your new digital library. This will mean ensuring you have an available ethernet port and suitable cabling for its location.

The next thing to think about is how and where you will store all the music you want to listen to; just think of it as creating your own personal version of Spotify or Tidal to browse. There are a couple of options for this, depending on how big your library is, or your budget for investing into it…

Music server: You can buy dedicated music servers from several brands including Naim, Bluesound, Melco, Innuous and Roon. This is usually one of the more expensive ways of creating your music library, but it is also among the most straightforward, as it will slot straight into any existing hi-fi system.

Generally, a music server is a combination of storage and streaming capabilities, and some may even include a CD drive, like the Bluesound Vault 2i or the Naim Uniti Core. This feature is handy for people with towers of CDs to digitise, as the server will rip and store them automatically, though of course you can do this separately by connecting an outboard CD drive if one isn't included.

Music servers will usually have their own accompanying control app for organising and browsing your music too, and they're usually pretty easy to use, which again helps to make the process all the more simple.

A music server is often thought to offer the very best sound quality for those who can afford them, as it offers more audiophile-grade circuitry and components.

Network-attached storage drive (NAS): A NAS drive is another popular solution for creating your own music library. However, unlike a music server, this acts purely as storage that can be found on your network.

It runs like a low-power computer and is always on, ensuring files are always available when you want them. Popular NAS storage brands include Synology, QNAP and Western Digital, thanks to their quiet running, reliability and expansion options.

FLAC is the most popular format… it gives a good balance between sound quality and file size

The base price of a NAS drive often comes without storage, so do consider your budget for what you require. Retailers will often offer bundles to make this easier. You can choose between HDD (hard drive) or SSD (solid-state drive) for your storage. An SSD has no moving parts so it is usually faster, quieter and more reliable, but it's also more expensive.

Installing whichever you choose is usually straightforward enough too, as most NAS drives have trays for simply slotting these storage drives in — usually without any extra tools required.

As mentioned, a NAS drive will usually need pairing with a separate music streamer in a traditional hi-fi setup, though a multi-room system like Sonos will be able to find the NAS on your network and play its content back directly.

Other wireless speakers may also be able to playback your networked music library using AirPlay 2 depending on compatibility — you'll just need the right control app to make that happen. Most NAS drives come with their own, but there are great third-party ones that offer more functionality and smarter organisation. Just remember that your source device must be connected to the same home wi-fi network as your NAS drive in order to find it.

Home computer: One of the cheapest ways to build a music library is on your computer.

Laptops aren't the best choice for this, as you'll need to leave it on at all times to be able to access your music whenever you want it. This always-on design is not something laptops were necessarily designed for — they can run quite warm and also have batteries that degrade over time — but it can work if you're just dipping your toe in the digital music library waters.

A desktop computer is a better option, particularly because they are usually more flexible when it comes to additional storage, offer more ports for external drives, and run more efficiently than laptops do. You could even set up a Raspberry Pi to serve this purpose, with a little bit of know-how.

No matter how you decide to store your library, don't forget to back it up. The last thing you want is to put all this effort into building a digital library and then lose it all to a hardware failure! It's rare, but it happens. Look into auto backups which run regularly, as this will save you time and hassle and ensure you're never caught short.

How to digitise your CDs

If you don't have a music server with an integrated CD drive for easy automatic ripping (like the Naim pictured above), you'll have to do it manually.

If your computer has a CD drive, you can use that, or you can attach an external CD drive that often connects over USB. Software like Exact Audio Copy or dBpoweramp will then automatically correct any errors that occur in the digitising process.

You can then connect to your music storage over your local network and store the ripped files there — unless you're using your computer for that of course; then you can store it straight onto your desired hard drive.

How to digitise your vinyl

Don't expect ripping your vinyl to be quite as fuss-free as making a copy of your CDs. It isn't. CDs are easy. Records require a bit more work, but the results can be worth it.

There are numerous hardware configurations, but the basic building blocks are: a turntable (of course), a phono stage, an analogue-to-digital converter with USB output, and a computer with suitable recording software. If any of those are missing from your current arsenal, it needn't mean spending heaps of money, but these are the nuts and bolts.

It seems complex, but the system can be simplified. There are many turntables on the market with a phono stage, analogue-to-digital converter and USB output built in — the Sony PS-HX500, for instance. Usually referred to as USB turntables, these are a convenient way to get music on vinyl into your computer. The downside is that most tend to be at the budget end of the market and concentrate merely on getting the job done rather than doing it particularly well. Simply put, your recordings won't necessarily reflect the quality of sound possible from your vinyl abums.

But what if you already have a turntable? Then the best option is to buy a decent USB phono device, like the Rega Fono Mini A2D. Such units pack a phono stage, analogue-to-digital converter and USB output in one neat box.

Perhaps a headphone amp too, if you're lucky.

Assuming you have a computer, you need some recording software. There are many options on the market, some specifically designed for recording vinyl. Channel D's Pure Vinyl comes in at the top end and offers a great deal of flexibility. It features built-in phono equalisation, for example, so you can feed the turntable's output straight into the computer without needing a phono stage in the signal path. There are also powerful editing functions to help optimise the recording. It's great, but the downside is a price of several hundred dollars.

A more affordable alternative is VinylStudio. This includes many of the features of Pure Vinyl, including built-in RIAA equalisation, but costs only $30 USD (around $45). For many people, even this may be a step too far. If that's the case, check out Audacity, which is free and does a good enough job. At first, the interface looks pretty complicated, and some of the editing functions take a while to figure out, but spend some time getting familiar with it and it works well.

Before you start recording, make sure your deck is working optimally. If you haven't checked your turntable set-up for a while, it's worth doing so. Little things, such as whether it's sitting level, or that there's enough oil in the main bearing, can make all the difference to the performance.

Check your cartridge too. Is the tip free of fluff? Are the tracking force and bias adjusted correctly? These simple things can help produce a better-sounding recording.

In stark contrast to the few seconds that ripping a typical track from CD takes, vinyl can only be recorded in real-time. If a song lasts five minutes, that's how long it will take to record. So take your time. Make sure the player isn't jostled during the recording, and keep the playback volume low to reduce any degradation of sound caused by feedback from the speakers.

Also, make sure your records are spotless and dust-free. Ideally, they would be brand-new and unused straight from the sleeve, but understandably that's not practical in most cases. Remember: any hisses, clicks and pops will be recorded along with the music. While such sounds may — if they're not too excessive — add character to vinyl playback, people tend to be less forgiving of such noises from a digital source. You can buy software to edit such sounds but it's a time-consuming process, and if you've been overzealous all that additional processing may spoil the recording.

What format should you record in? Storage is affordable (see the next section) so go down the high-resolution route. 24-bit/96kHz is the norm for many studios and seems a good compromise between quality and memory space used.

WAV, AIFF or FLAC? It doesn't really matter, as long as the kit you normally use is compatible.

While CD music or music files often have metadata built in, records don't have this, so the information has to be entered manually. The process is fairly tedious, especially if you've recorded a large quantity of music, but it's essential to make it easy to locate tracks once they're in your computer's music folder.

Your computer won't recognise individual tracks, so usually you'll have to stop recording when you've finished recording each one. Tracks that flow into each other are an issue too. Mark these for gapless playback or you'll have a few seconds of silence where there shouldn't be.

How much storage do you need?

The storage you need will — surprise, surprise — depend on how much music you have and how you store it. If you have a lot of 24-bit/192kHz hi-res music files downloaded, they are going to need more space than files ripped from CDs due to their greater bitrate and therefore size.

The file format you rip your CDs to will have an impact on storage, too. Ripping them to MP3 will be one of the most space-efficient ways, but you won't get the best sound quality. You'll want to choose FLAC, WAV or AIFF for the best results.

FLAC is the most popular format and the go-to recommendation. It's compressed but still lossless, so it gives a good balance between sound quality and file size. It also stores music metadata better than WAV or AIFF does.

WAV is the standard format in which all CDs are encoded. It also offers great sound quality, though as it is uncompressed file sizes are huge (especially when it comes to hi-res). It has poor metadata support, too, which means no support for album artwork and hit-and-miss results when it comes to artist and song title information.

AIFF files are Apple's take on WAV but generally offer better metadata support. They're still huge, mind you, so FLAC is by far the preferable format.

As for how much storage you need, a full CD album of 70 minutes ripped to FLAC will take up around 420MB. Bear in mind that most music CDs aren't that long, but allowing for that means you could store around 2,380 albums per 1TB.

That reduces significantly with high-res audio files. You should allow for around 33MB of storage per minute for 24-bit/96kHz files, or 66MB per minute for 24-bit/192kHz files.

If you consider the same 70-minute album as above, that means you can expect to store between 216 and 432 albums in that same 1TB drive. Just don't forget to double whatever you decide upon, for your backup — or consider cloud-based backups instead.

Organise your music

Once you have your music stored, you're going to need a way to browse and access it. Your options may well depend on where you're storing it — if you're running a Mac or Macbook, for example, it may well make sense to use Apple's default Music software (or iTunes on older machines).

However, if you have DSD files, Apple's software won't support this natively. You can convert them, or you could look to alternative software like Audirvana or Roon (Mac/PC), though there is a fee for both of these — and Roon's is ongoing. Free, slightly simpler options like Foobar2000 may do the job if you don't want to fork out any more money.

As discussed before, music servers will usually have their own control apps for browsing and organising stored libraries, and these are usually pretty good. Sonos owners will be able to browse any music on the same network directly through the Sonos app too, once you have it set up.

NAS drives will often have their own software for browsing their contents, which will help you with playback too. Synology offers one of the better options, but you may still want to look to third-party software for the best experience.

Plexamp is by far the most sophisticated in this space, particularly for those who want to browse their catalogue across laptop and mobile devices. You simply load the Plex server app onto your NAS and then the Plexamp player app on your playback device(s) of choice.

You're ready to go!

If you've followed the above, you should now be in good shape to start listening to your own digital music library, free from the ties of a monthly music subscription. Happy listening!

Verity Burns

Rega's $249 Fono Mini A2D is a fantastic-performing budget phono stage — and its ability to rip vinyl records is a real bonus.

Dellichord FR6

Loudspeakers

+
- Exemplary bass
- Extended treble
- Excellent midrange

−
- Low efficiency
- Lowish impedance

RRP **$4,995**

Dellichord's Australian designer and founder, Andrew Hutchison, says that his newest loudspeaker design is 'deceptively simple'. However, I'd venture to say this description is not *entirely* accurate because the design of the Australian-made Dellichord FR6 is actually incredibly complex!

Sure, if you look at them from the front the FR6 look like fairly ordinary, two-driver bookshelf loudspeakers, with a single mid/bass driver and a dome tweeter. But if you look around the back of the cabinet, you will find an enormous 'race-track'–shaped passive radiator. "So what?", we hear some readers scoffing, "passive radiators aren't that unusual!"

Ignoring for the moment that passive radiators are actually fairly unusual on cabinets of the FR6's size (38.5 x 23 x 33cm, if you were wondering), there is an additional driver inside the FR6 cabinet, mounted on an angled internal baffle, so that each FR6 in fact has *two* mid/bass drivers, a tweeter and a passive radiator. Tell me that isn't unusual...

Why would you put a bass driver inside a cabinet where a) it isn't visible, and b) neither of its drive surfaces (the front and rear of the cone) is directly coupled to the air in the room? These days, that's a very good question. In the past, designers who wished to take advantage of the

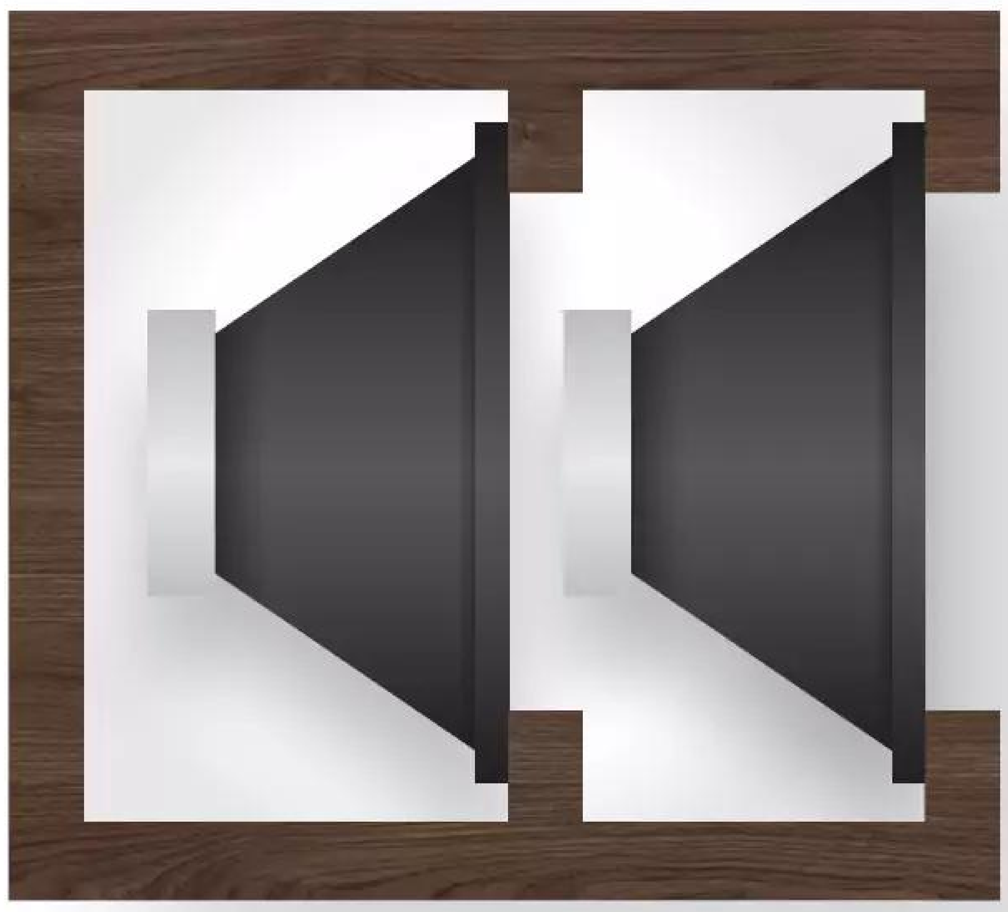
Figure 1

many benefits of using two bass drivers rather than one had to accept that the enclosure would have to be larger — much larger. This is because the design parameters of older drivers were such that if the correct enclosure volume for one bass driver was 50 litres, it would need to double to 100 litres if a second driver was added.

The way to get around this — to gain the benefits of dual bass drivers without the disadvantage of a larger cabinet — was to mount one of the drivers inside the cabinet in what is usually called an 'isobaric' arrangement (or, if you're a certain Scottish company looking for a patentable description, 'isobarik').

The compound word is derived from two Greek words: 'iso' (meaning equal) and 'barikos' or 'báros' (meaning pressure). (The English word 'barometer', the name for a device that measures atmospheric pressure, stems from the same Greek root.)

To see where the 'equal pressure' expression comes from, take a look at Figure 1 (above), which shows two bass drivers in an isobaric configuration. When both cones move in the same direction (whether forward or backward) at the same time, the volume of air between them — and, more importantly, the air pressure between the two — will remain constant (equal), whereas the air pressure behind the back of inner-most driver will become greater when the cone is moving backward, and lower when it's moving forwards.

In this example, both cones are orientated in the same direction plainly because it is conceptually easier to imagine. But other arrangements can deliver the same 'equal pressure' outcome, one of which was popularised by Danish manufacturer Jamo, and another by UK manufacturer Acoustic Energy. In the case of the Dellichord FR6, the driver orientation is the same as shown in Figure 1, but the baffle on which Dellichord mounts the internal driver is angled rather than vertical. (You can see this in the image of the cabinet internals, supplied by Dellichord, on the following page.)

Perhaps the main advantage of the isobaric design is that the front-mounted cone — the one delivering the sound into the listening room — essentially moves as if it were in free space, rather like an open-baffle loudspeaker (yet another design popularised by Jamo) but without the designer having to worry about low-frequency cancellation effects.

This means that an isobaric design has very low distortion as there is essentially no impediment to cone movement, and cone motion is identical no matter whether the cone is moving forward into the listening room or backward away from it. Note that I'm disregarding the volume of air in the room that is in front of the cone as it is essentially as 'isobaric' as the rear of the cone.

Nowadays, isobaric designs have somewhat fallen from favour, firstly because modern drivers don't require a doubling of cabinet volume when two drivers are used rather than just one, and secondly because using two drivers is, as you might guess, twice as expensive as using just one. (Though in the case of the isobaric design, it's far more than twice as expensive due to the cost of building a cabinet with an isobaric chamber being far higher than it is to build a conventional cabinet.)

In the case of the Dellichord FR6, Hutchison has made its acoustic design even more complex than a standard isobaric design. He has made it so the output of the rear of the internally-located driver provides the air pressure to drive a passive radiator mounted on the rear baffle, rather than enclosing it completely or venting it.

Using a passive radiator increases the overall efficiency of the system and extends low-frequency response, further increasing the level and extension of the bass from the FR6's small cabinet. These outcomes are typically achieved by incorporating a bass-reflex port, but using a passive radiator enables more accurate 'tuning' of the cabinet; completely avoids the problem of noise caused by air moving through the reflex

DELLICHORD BACKGROUNDER

At a time when almost all high-fidelity loudspeakers are being manufactured in the People's Republic of China (though this origin is often hidden from buyers who are led to believe by many manufacturers that their iconic 'British' or 'American' or 'French' or 'Danish' etc loudspeakers were made in those countries when nothing could be further from the truth), it was very satisfying to discover that the loudspeakers designed and manufactured by Australian manufacturer Dellichord are actually designed and manufactured in Australia.

However, in the interests of total transparency regarding the origins of the elements that go into manufacturing each loudspeaker, Dellichord says right up front that the drivers it uses are manufactured in Malaysia, its Birch plywood is sourced from Finland, and its crossover components are sourced variously from France, Poland and Thailand. Dellichord even goes so far as to identify that the glue it uses is made in the USA. So what is left to be sourced here in Australia? That would be the MDF wood panels used for the cabinet, the paint for the cabinet finish, the grille cloth, the internal wiring, the speaker terminals and the acoustic foam.

The speakers are assembled here in Australia in the so-called 'Sunshine State' of Queensland, whose government proudly boasts is 'nearly five times the size of Japan, seven times the size of Great Britain, and two-and-a-half times the size of Texas'. Queensland is also the State where Australia's national airline, Qantas, originated back in 1920. Indeed that airline's name is actually an acronym for 'Queensland and Northern Territory Aerial Services'.

Dellichord's designer and founder, Andrew Hutchison, who has been in the hi-fi business for more than 40 years, released the Dellichord FR6 way back in 2013. At the time, he said that his goal with the new design was for it to deliver large, full-range sound, with accuracy, detail and a very easy-to-listen-to character in 'acoustically normal' rooms, as well as perform well in difficult acoustic spaces. He's also on record as being very pleased with the result of his efforts, saying that the FR6 has "a clean accurate sound, incredibly good stereo imaging and staging, high levels of detail and a fast tuneful bass performance... the sound is very enjoyable and will have you 're-listening' to your music collection".

As for the company name itself, I thought it might stand for 'delicious chord' or such-like, but it's simply a name Hutchison invented. "Dellichord is a word conceived by Andrew as the designer of the Dellichord range of loudspeakers," said Sharron Hayden of Dellichord. "Andrew's intention was to create a brand name untainted by connotation, context or nuance."

port (which a dear, now-departed colleague of mine jokingly called 'port noise complaint'); and largely prevents high-frequency sound inside the cabinet from leaking out through the port.

The very obvious disadvantages of using a passive radiator are the not-inconsiderable costs of providing the radiator itself and constructing the cabinet in such a way as to accommodate it.

THE EQUIPMENT

So then, it is very expensive to build a bass-reflex isobaric loudspeaker that uses a passive radiator, simply due to the driver count and the cost of building a complex cabinet.

But there's even more expense involved that goes beyond those two reasons: in order for an isobaric design to work optimally, very high-quality drivers are required. And this is certainly the case with the Dellichord FR6.

The two mid/bass drivers in the FR6 are, of course, identical, so I will simply describe the visible one. The overall diameter of the basket (or chassis) is 170mm. The moving diameter (cone plus roll surround) is 135mm. The Thiele/Small diameter is 125mm, putting the effective cone area at 123cm². The cone itself is 112mm in diameter. The basket is an ultra-solid design, cast in one piece from aluminium alloy, with support ribs that allow for free movement of air behind the cone — essential for isobaric operation.

The cone's composition is said to be a paper/wood fibre and plastic composite that, according to Dellichord, 'has very controlled break-up characteristics, especially towards its upper-frequency range where it meets the tweeter'. The cone is supported by a standard half-roll profile rubber suspension.

As regular readers will already know, I prefer the use of rubber as a suspension material for loudspeaker cones because foam, which is often used as an alternative suspension material, has a very short working life in Australia due to our unique climatic conditions (primarily lots of ultraviolet radiation along with proximity to salt water). Indeed, I've known of some foam surrounds that have barely survived the loudspeaker manufacturer's warranty period before starting to disintegrate.

The tweeter, meanwhile, is a soft dome 29mm in diameter.

As mentioned earlier, the passive radiator is a 'race-track' (or, if you'd prefer, 'oval') shape. It's located on the rear panel, with its 'long' side oriented vertically, and is very large — around 25cm 'long' and roughly 15cm across. Cone compliance is very low and the chassis, unlike that of the mid/bass driver, is made of pressed steel. Also, while the driver and tweeter are mostly recessed into the cabinet so that their chassis edges are almost flush with it, the passive radiator sits proud of it so that the roll surround suspension, in particular, extends some way from the rear panel. Because of this arrangement, Dellichord attaches a foam pad to protect it during transportation. I can't help but think that maybe a separate rear grille may have been a better option, not only to protect it during transportation but also to improve its appearance in a home — but a grille would have further added to the cost of the loudspeaker, and because the passive radiator is at the rear of the cabinet it is never really visible anyway.

Below the passive radiator is a cut-out for a single pair of ETI Research speaker terminals, which connect to the FR6's crossover network. This network, says the company, is made with 'premium quality components including metal film resistors, polypropylene capacitors and both air-cored and P-cored inductors, all of which are mounted on a fibreglass printed circuit board'. It has a nominal crossover frequency of 1.7kHz.

The Dellichord FR6's cabinet depth measurement of 33cm takes into account the front grille and the protruding passive radiator. (The speaker terminals protrude from the cabinet too, despite being recessed deeply into it).

The standard finish is a real wood veneer of Queensland Walnut coated with a clear satin varnish (as pictured), but other real wood veneers are also available.

LISTENING SESSIONS

It was very obvious right from my initial 'run-in' sessions that the Dellichord FR6 design was punching well above its weight in the bass department; both the extension and levels of the low frequencies I was hearing were significantly greater than I'm used to hearing from loudspeakers of the FR6's size. I was instantly impressed by the neutrality of the bass too.

> **It was very obvious that the Dellichord FR6 design was punching well above its weight in the bass department**

The baffle on which Andrew Hutchison has mounted the internal driver in his isobaric configuration is, rather unusually, angled as opposed to vertical.

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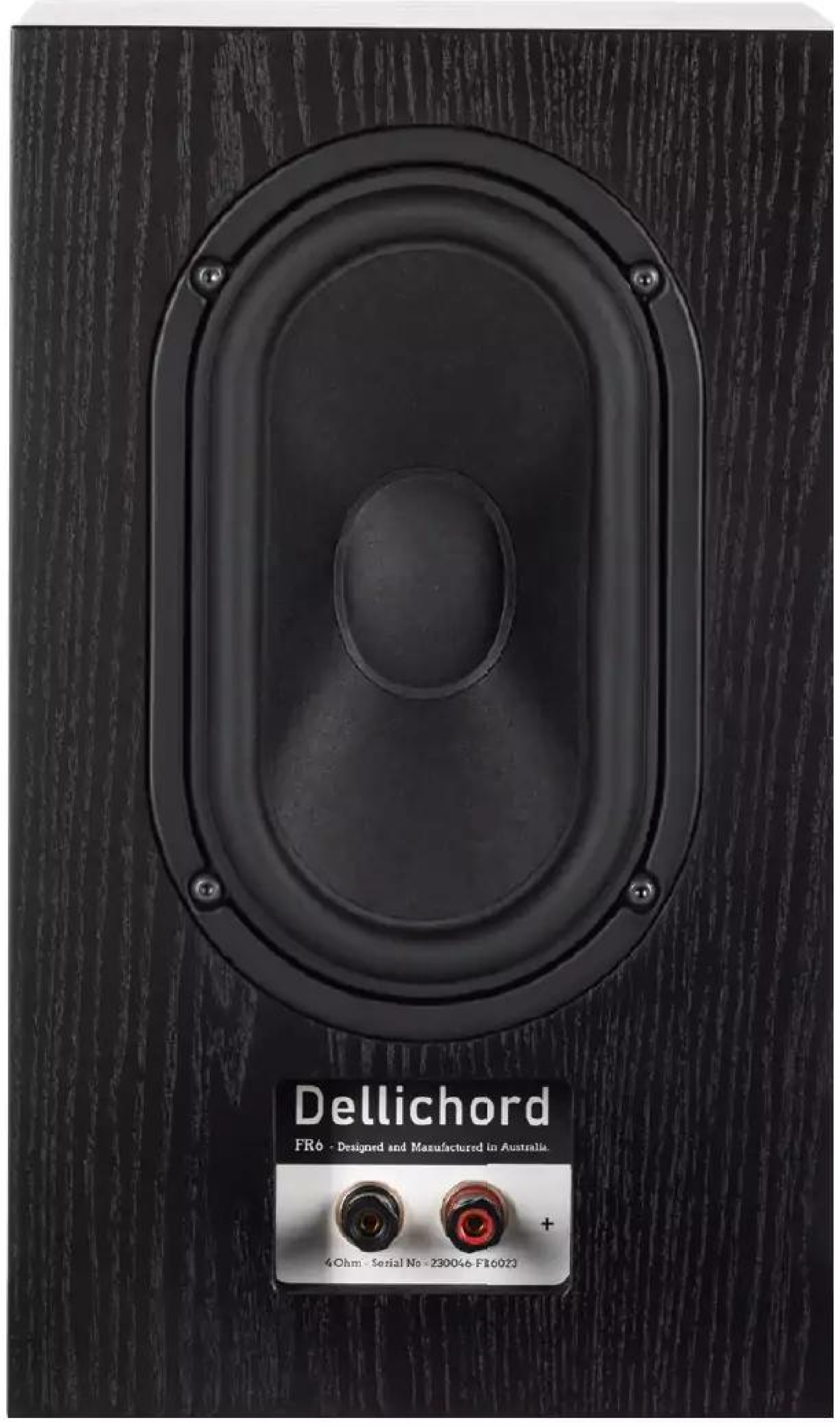


The sound quality became even better after I'd run in the speakers fully, with notable improvements. Listening to *Kill Bill*, the second track on SZA's album 'SOS' from 2022, the gorgeously soft and deep bass was reproduced with an almost loving tenderness by the Dellichords, such that it was instantly audible that there's something different about it — which turns out to be that it's played using a six-string electric guitar tuned down an octave. It's a strange and lovely sound, beautifully reproduced. Elsewhere in the track (and yes, it does take its name from the movie series of the same name), almost all the sounds are synthesised (the Prophet 6 and Roland TR-808 the synthesiser and drum machine of choice here), which is made equally clear by the FR6.

Like SZA, Beyoncé missed out on a Grammy again this year, so we made sure we listened to her album 'Renaissance' (which should have won!) with the FR6, as a kind of homage. Again, there are lots of synth and samples on the album, but I rather like how the vocals were recorded very cleanly, so when you listen to *Cozy* (and no, we're not pandering to Beyoncé's all-caps craziness here in *Australian Hi-Fi!*), you'll hear the stunning clarity of her voice, her backing singers and the dulcet tones of Ts Madison. Or at least you will if you're listening to a pair of Dellichord FR6 because the midrange delivery is exceptionally good.

Dual mid-bass drivers work together with an oval passive radiator to create exceptional bass response from a compact enclosure.

The glory of the FR6's midrange gave me the hankering to hear more of the same but with real instruments, so I spun up one of my newest favourite albums, Victoria Monét's 'Jaguar II'. Yes, her voice has been sweetened by the record's producer, but listen to the accuracy of the guitar sound on *Smoke (Reprise)* as just one example of the loudspeakers' midrange accuracy. Also listen to the soundstaging effects engineered into *On My Mama*, which show how well the two Dellichord FR6 are acoustically matched with each other. This matching is made even more obvious when you hear the precision of the stereo imaging, such that centrally placed images are fixed rock-solid at stage centre, while other images are spread right across it, exactly where the producer intended.

The grand piano is in many ways the ultimate tester for any pair of loudspeakers, and the Dellichord FR6 did a magnificent job of delivering the performances by Krystian Zimerman of the various compositions that are on Deutsche Grammophon's CD 'Karol Szymanowski: Piano Works.' Curiously, Zimmerman (or DGG) omits three of this famous Polish pianist/composer's best-known works — his piano sonatas and three Métopes — but arguably, as Szymanowski himself is hardly a household name, this is forgivable. If you aren't familiar with his works, this DGG release is an ideal place to start as it contains a representative sampling of his entire oeuvre. Listen especially closely to the Preludes 1, 2, 7 and 8 from his Op No 1.

As you'd expect of DGG, the recording quality is exemplary, and is made perfectly obvious by the Dellichords, which do a phenomenal job of recreating the sonics of Zimmerman's grand piano. I couldn't quite credit how realistically Zimmerman's heavy left-hand chords were issuing from the FR6 during *Variations on a Polish Folk Theme Op. 10*. And in the *Sheherazade* from *Masques Op 1*, the high-frequency sounds from the extreme treble notes are perfectly pitched and ring perfectly true; there's not a hint of exaggeration or forwardness in the highest frequencies. The FR6 are very obviously beautifully tonally balanced.

There is a tiny price to pay for all this sonic perfection. I found I had to turn my amplifier's volume control a little further clockwise than I do even with my relatively inefficient reference loudspeakers, which points to the fact that the FR6 design is not particularly efficient. Indeed, that is reflected in Dellichord's own specification for efficiency of 85dBSPL, which is around 2dB lower than the average for domestic hi-fi loudspeakers. Nonetheless, I was able to achieve totally satisfying volume levels in my listening room with amplifiers rated at 60 watts per channel and, thanks to the dual-driver isobaric nature of the FR6's design, when I used more powerful amplifiers to drive them, they were able to put the additional watts to good use.

CONCLUSION

If you demand realistic-sounding bass from a pair of small speakers, you will want to audition a pair of Dellichord's FR6. The fact that you will also hear from them great midrange sound as well as lovely treble, along with an all-encompassing stereo image will no doubt be very welcome bonuses. ***Greg Borrowman***

TECH SPECS & CONTACT

Brand: Dellichord
Model: FR6
RRP: $4,995 per pair
Warranty: Five Years
Frequency response: 33Hz – 20Khz
Sensitivity: 85dBSPL
Nominal impedance: 4Ω
Tweeter: 29mm soft textile dome
Drivers: 16.5cm natural fibre cone
Passive radiator: 15 x 25cm paper cone
Dimensions (hwd): 38.5 x 23 x 33cm
Weight: 11kg (each)
Finishes: Queensland Walnut, Maple, Black Ash
Distributor: Dellichord Pty Ltd
Address: 7/20 Rivergate Place
Murarrie, QLD 4172
T: 04 1877 2434
E: stereotechmfg@gmail.com
W: www.dellichord.com.au

Laboratory Test Report

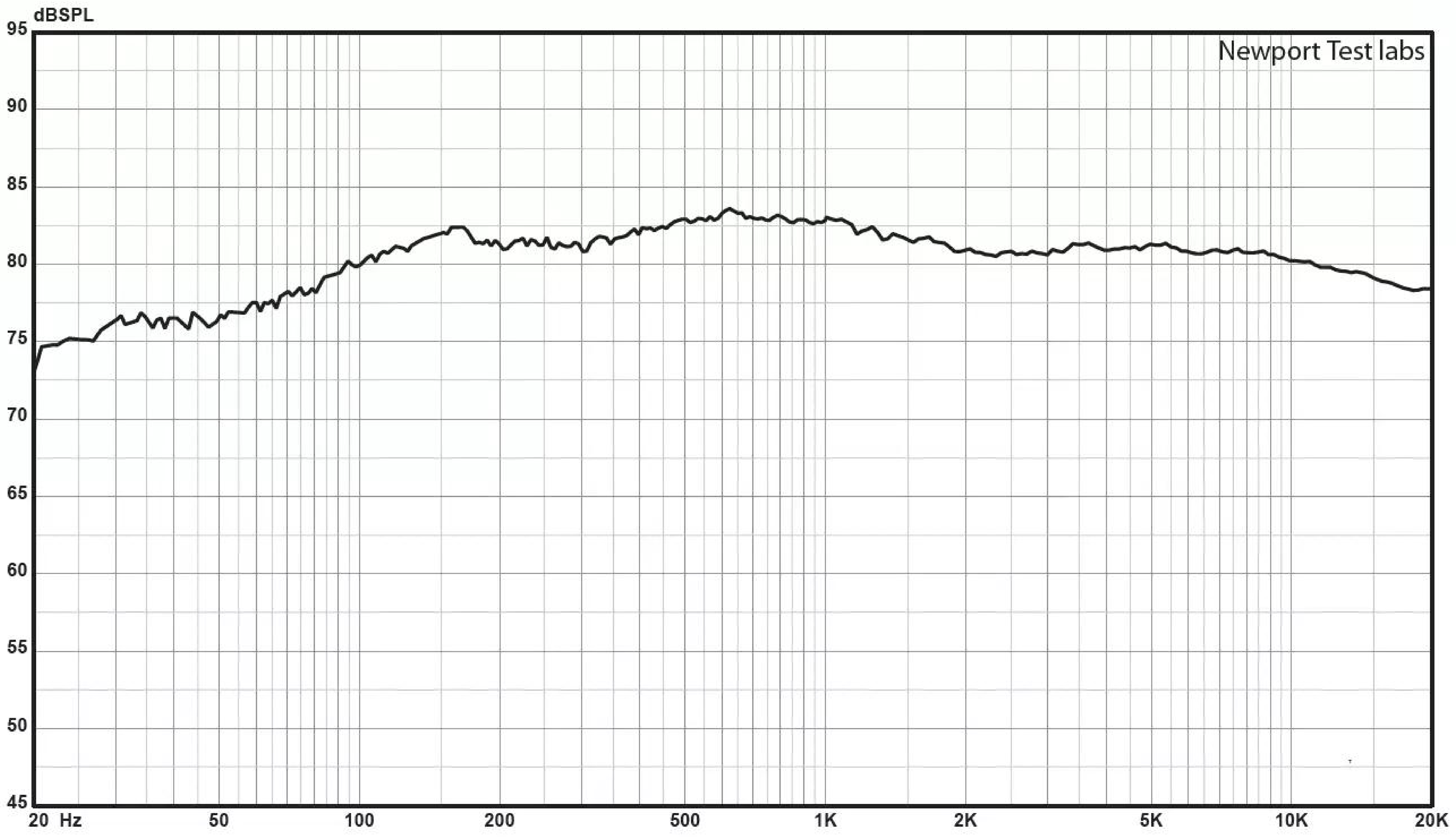
Readers interested in a full technical appraisal of the performance of the Dellichord FR6 loudspeakers should continue on and read the LABORATORY REPORT published on the following pages. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

The in-room frequency response of the Dellichord FR6, as measured by *Newport Test Labs*, is shown in Graph 1 and is the averaged result of nine measurements, made in a square grid with the tweeter at the central axis, using pink noise as a stimulus. You can see that the response extends from 55Hz to 20kHz ±3dB (though 20kHz is simply the upper graphing limit for this test — the FR6's high-frequency response extends above 20kHz, as shown in Graph 2).

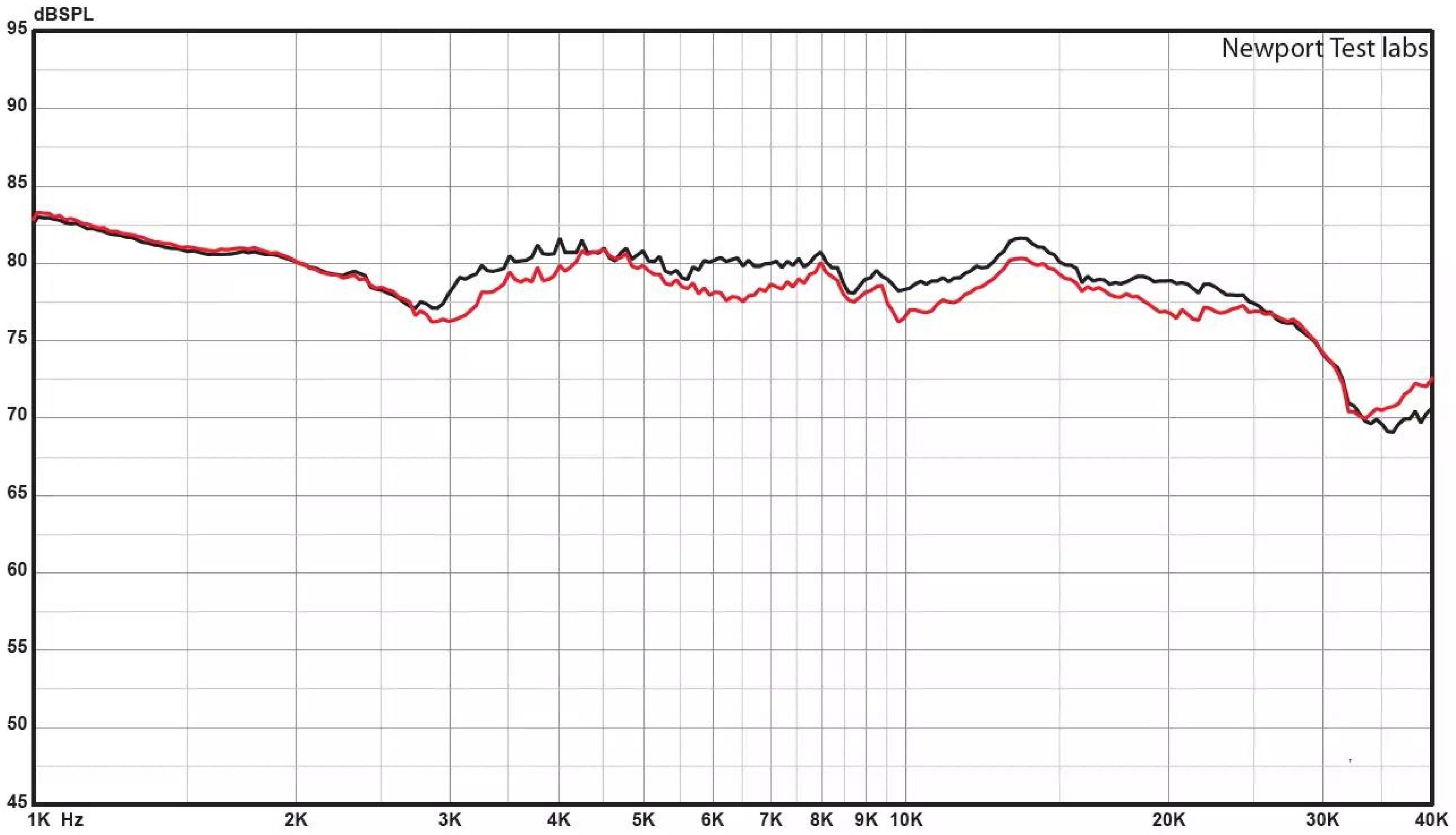
Importantly, the linearity of the response across the most important part of the frequency range — the seven octaves from 100Hz to 10kHz — is within ±1.25dB, which is exceptionally flat. There's a very, very slight rise in the response between 300Hz and 2kHz that past experience would suggest is an indicator that these speakers will be very kind to the sound of female vocalists, and will also give reproduced music a more 'live' sound quality.

The high-frequency response of the Dellichord FR6 is shown in Graph 2 and was measured using an electronic gating technique that simulates the result that would be obtained in an anechoic chamber. It shows the response with the loudspeaker grille in place (red trace)

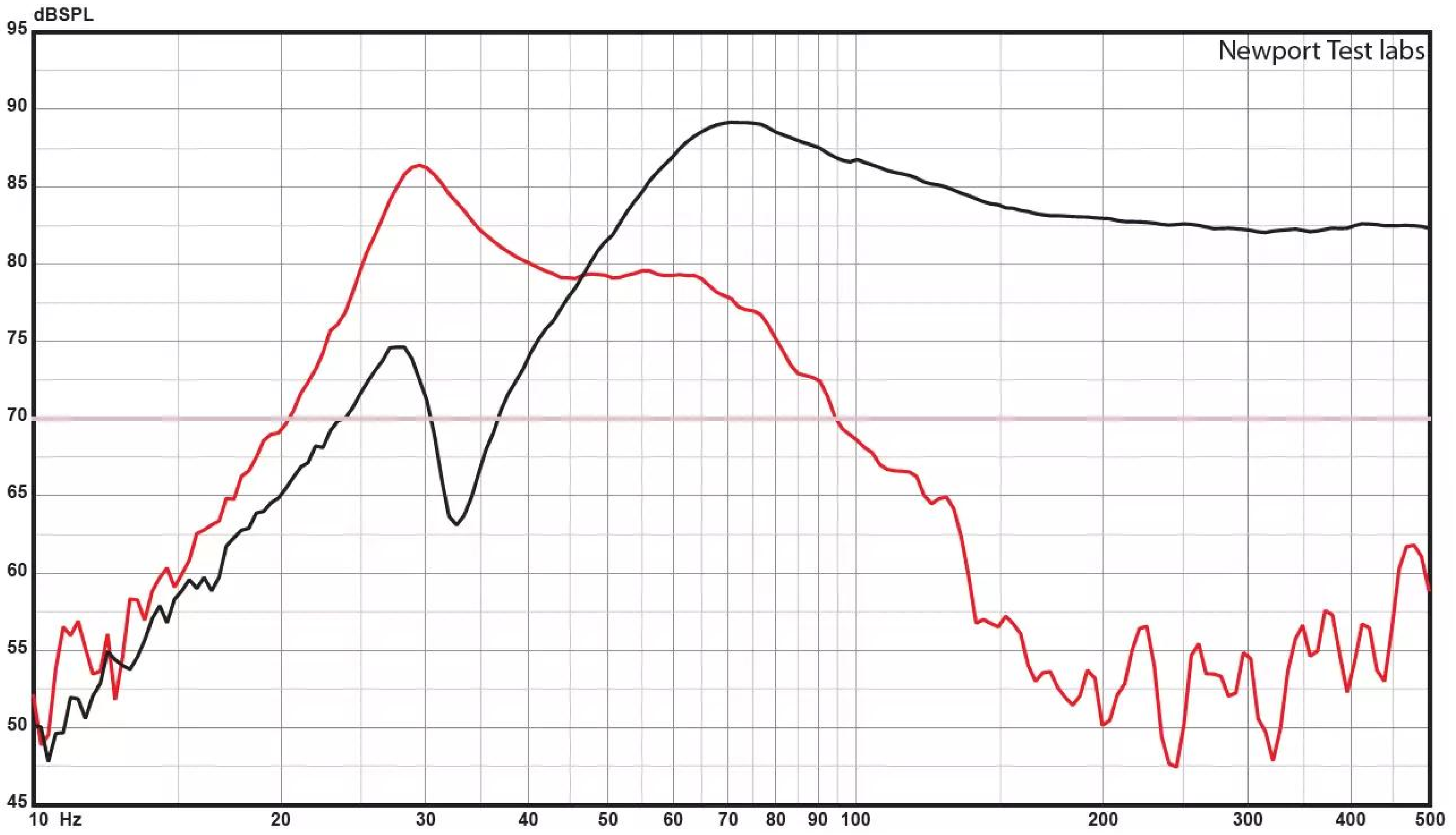
Use a moderately high-powered amp if you wish to generate high sound pressure levels in your listening room



Graph 1. Dellichord FR6 in-room frequency response.



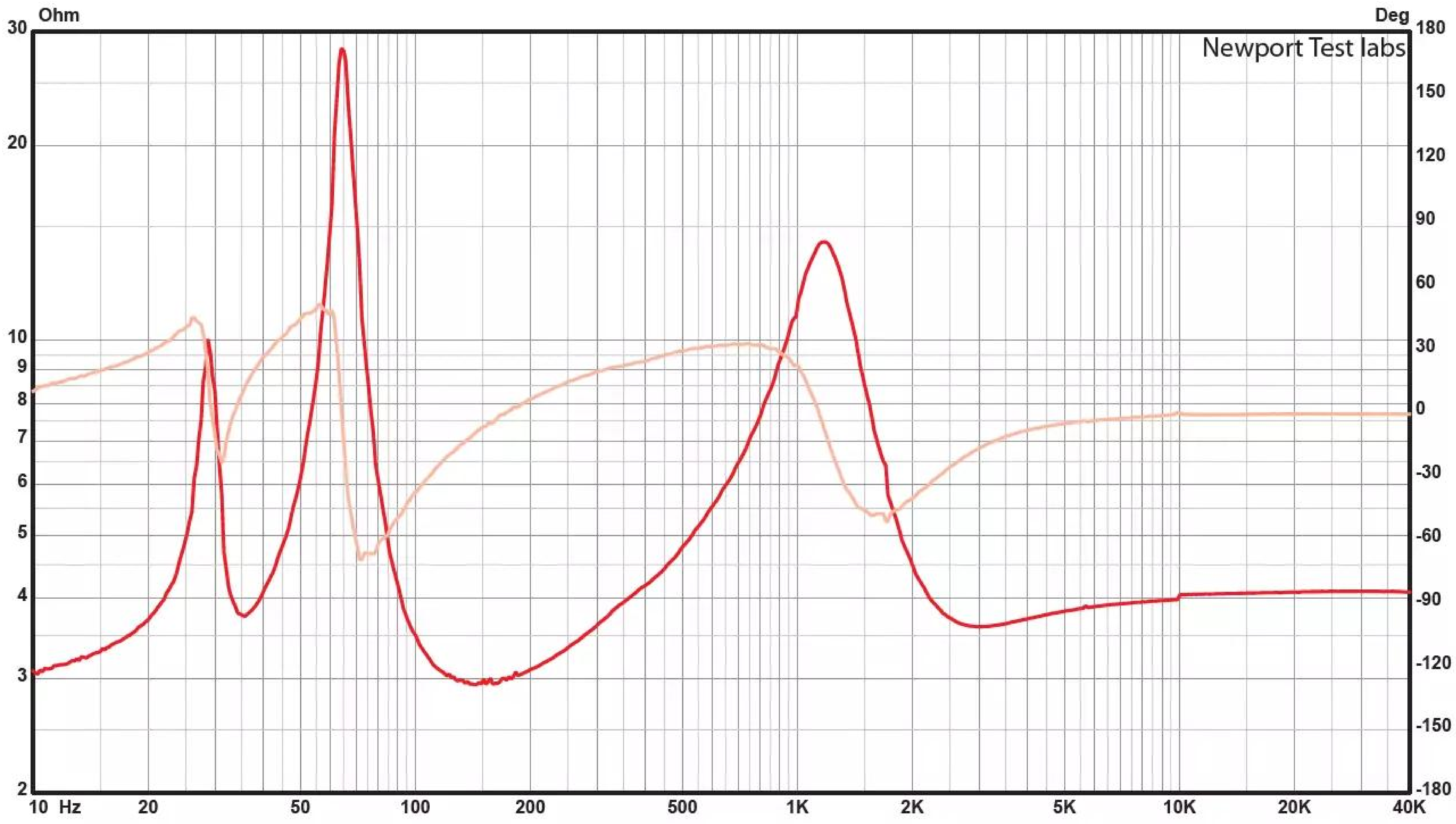
Graph 2. Dellichord FR6 high-frequency response on tweeter axis, at one metre, grille off (black) vs grille on (red).



Graph 3. Dellichord FR6 near-field low-frequency response of bass driver (black) and passive radiator (red).

and without it (black trace). The two traces are so similar that they're essentially identical.

There is a slight loss of volume when the grille is used, but it's almost independent of frequency, thus frequency balance is unaffected. The slight dip in response below 3kHz is a microphone positioning effect that occurs when a single trace is used, as in this case, rather than a grid average (as in Graph 1). You can see that the response remains within the ±3dB envelope out to 25kHz, after which there's a very slow roll-off to 33kHz. This extension means the overall frequency



Graph 4. Dellichord FR6 impedance (red) and phase angle (orange).

response measured by *Newport Test Labs* for the Dellichord FR6 was 55Hz – 25kHz ±3dB.

Newport Test Labs measured the low-frequency response of the Dellichord FR6 using a near-field measurement technique. The response of the rear-firing passive radiator is shown by the red trace, and that of the front-firing mid/bass driver by the black trace. The response of the latter is greatly extended over what I'd normally expect for the same-sized driver in a bass-reflex (or infinite baffle) cabinet of the FR6's dimensions, and the peak output of the passive radiator, at just under 30Hz, is also lower in frequency than I'd expect from a conventional cabinet arrangement. There's also considerable acoustic output from the passive radiator from around 23Hz out to 80Hz. The overall effect would be more bass extension than one would reasonably expect.

The impedance graph also shows the extended bass response of the FR6's isobaric design, by virtue of the 'saddle' in the response occurring right down at 35Hz, but it also shows one of the drawbacks of the design, which is that the overall impedance is rather low, being lower than four ohms from 90Hz out to 250Hz and dipping right down to three ohms at 150Hz. These lowish impedances should not present any difficulties for a well-designed amplifier, but do mean you should use an amplifier that is more than happy to drive four-ohm loads. The three-ohm measurement at 150Hz is also considerably at odds with Dellichord's specification for the FR6, which states that the design's minimum impedance is 5.7 ohms.

It will also be important to use a moderately high-powered amplifier if you wish to generate high sound pressure levels in your listening room, as the efficiency of the FR6 design is very low, with *Newport Test Labs* measuring it as 83dBSPL at one metre using its standard (admittedly stringent) test methodology, which is 2dB lower than Dellichord's already fairly low specification figure of 85dBSPL. ***Steve Holding***

SHOW GUIDE – FULL ROOM LISTINGS INSIDE

australian hi-fi Show SYDNEY 2024

5, 6 & 7 APRIL

GREAT PRIZES TO BE WON!

SEE PAGE 4

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Innuos is the name for High Fidelity Digital Servers and Streamers.

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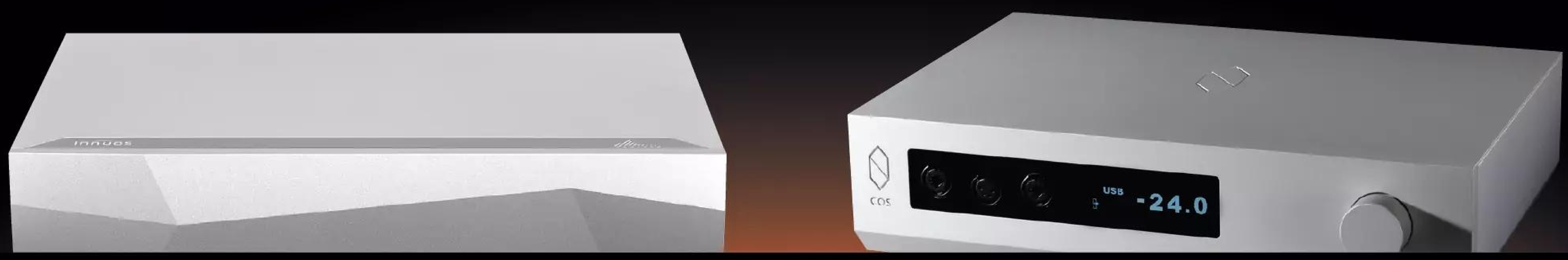
When every note is in the right place.



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Welcome back to Australia's greatest hi-fi show! Get ready to hear the world's hottest hi-fi and AV kit...

The Australian Hi-Fi Show is back! Following its inaugural event last year, the hi-fi and home cinema show is returning to central Sydney in April, giving audiophiles and tech enthusiasts the opportunity to see and hear the latest and greatest audio and AV products from around the world. Brought to you by *Australian Hi-Fi*, *What Hi-Fi?* and *Sound+Image* magazines, the Australian Hi-Fi Show 2024 will go even bigger and better than last year's event. Get ready for three full days of live demonstrations of more than 70 world-renowned hi-fi and AV brands, from homegrown Aussie greats such as Halcro and Döhmann to globally renowned superstars like Bowers & Wilkins and McIntosh. Think high-end hi-fi systems, headphones and wireless speakers, projectors and home theatre systems, and everything in between.

So buy your ticket, bring your own music, enjoy the listening experience in our comfortable sound lounges, and find what kit is right for you!

Tickets for the Australian Hi-Fi Show 2024 are now on sale online at: www.ticketebo.com.au/future-publishing-apac/australian-hi-fi-show-2024

There are 1-, 2- and 3-day passes on offer to suit any kind of schedule, and discounts are available for pensioners and students:

1 DAY PASS:
Adult - $20
Pensioner/Student - $15

2 DAY PASS:
Adult - $30
Pensioner/Student - $20

3 DAY PASS:
Adult - $40
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Get more from the music you love.

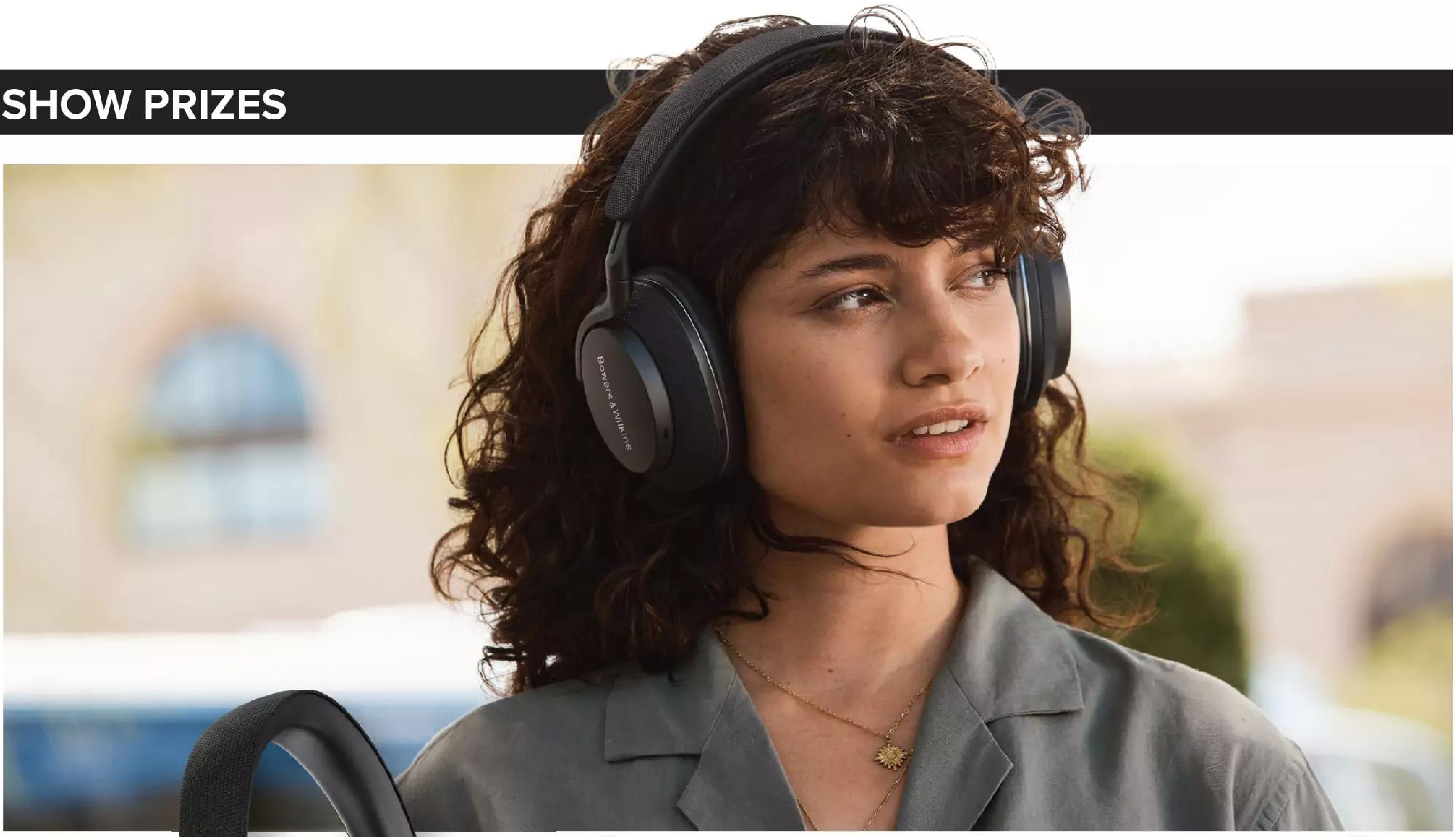
As our name suggests, we're about analogue sound. And at its heart that's the vinyl record. So at our presentation room at the Australian HiFi Show in Sydney you'll find the world's finest vinyl record cleaning method, Record Restore. Bring along a record for a free test clean if you like. Our own 'Turntable Whisperer' Mark Busby will also be demonstrating turntable set-up and the tools that he uses to achieve optimum results.

You'll also find analogue tube amps by Elekit of Japan and Red Roo of Australia: amps and phono stages you can build, have built, or build at our Amp Camp in the Blue Mountains.

They'll be playing into our Confluence loudspeaker system: open baffle and single driver. Be prepared to be surprised!

Towards the end of each day, guitarists can try a few chords on the Red Roo Rockstar guitar amp, made for your personal jamming pleasure!

Secret Chord Analogue WWW.SECRETCHORDANALOGUE.AU SEE US IN ROOM 1



WIN*

Bowers & Wilkins Px7 S2 wireless noise-cancelling headphones

RRP $599

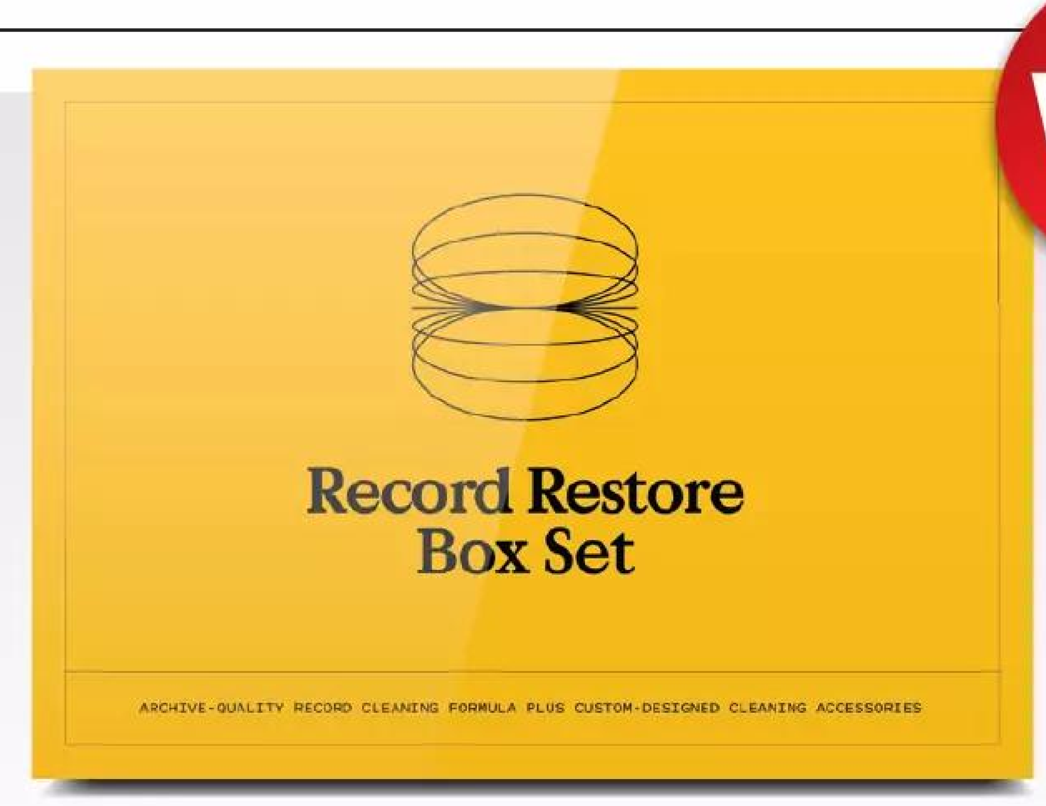
In these stylish over-ear headphones, custom-designed 40mm drive units and 24-bit-capable wireless platform combine for a truly immersive listening experience that allows you to hear more of what the artist wants you to.

WIN*

Yamaha TW-E3B wireless earbuds

RRP $299

From a studio session with your favorite artist to the best seat at a live concert, hear every detail with lifelike realism. These extraordinary earbuds combine Yamaha's acoustic and electric technologies, allowing them to defy the sonic limitations of their compact housings.



WIN*

Secret Chord Analogue Record Restore Box Set

RRP $169

This pack has everything you need to efficiently and easily clean up to 28 twelve-inch LPs, including 200ml Record Restore fluid, a support platter and pucks, a drying rack and the necessary tools.

WIN*

AudioQuest SorboGel Q-Feet isolators

RRP $198

Breathe new life into your system by damping unwanted vibrations (particularly those from components with spinning mechanisms), allowing it to sing deeper into the music.

 *Terms and conditions apply – please see **www.whathifi.com/news/aus-hifi-show** for full competition details.

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ROOM GUIDE – 9th FLOOR

australian hi-fi Show SYDNEY 2024

australian
hi-fi
Show SYDNEY 2024

SEE US IN THE
KIRRIBILLI ROOM
AND THE
EXECUTIVE BOARD ROOM

AGD

A passion to merge perfection and beauty in the art of audio reproduction – that is the motivation behind AGD Productions, from Los Angeles, California. Hear the stunning results and discover AGD's significant secrets in Indie Hi-Fi's Kirribilli Room suite, at the Australian Hi-Fi Show in Sydney!

HOLO AUDIO

It's an old cliché but so true: incredible build quality, immaculate tone, detail, dynamics and staging; and all with rock bottom noise levels: that's HoloAudio, maker of the best measuring R2R DACs in the world, and yet representing incredible value. Hear HoloAudio – and so much more – in the Headphone Room on the Show's Lower Ground floor.

Also showing

WILSON AUDIO | Grimm | MEZE AUDIO | Benchmark | Fe Ferrum | Dan Clark Audio | DETHONRAY | ZMF | RAAL requisite

INDIE HI-FI

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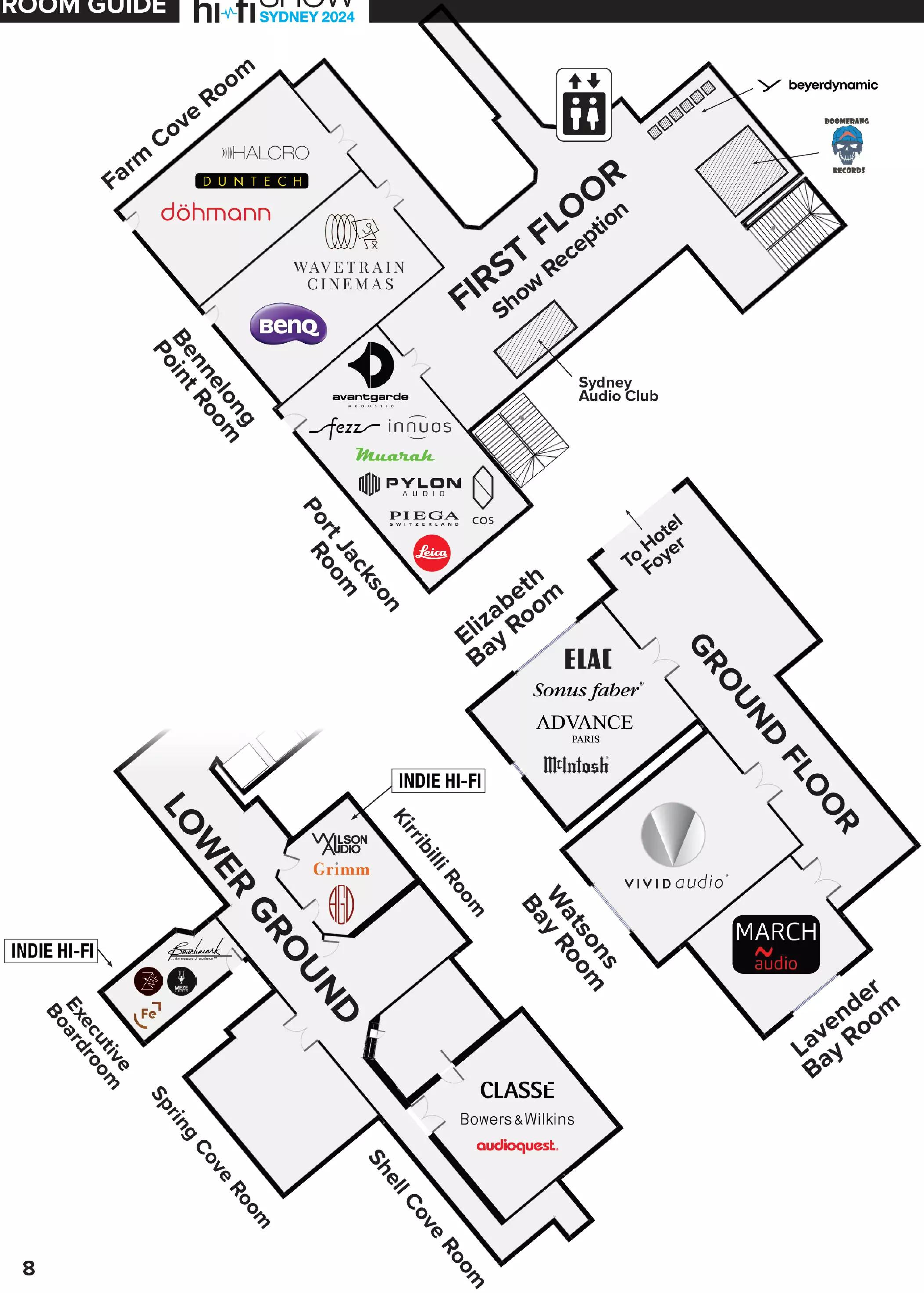
Farm Cove Room
HALCRO
DUNTECH
döhmann
WAVETRAIN CINEMAS
BenQ
Bennelong Point Room
avantgarde
fezz
innuos
Muarah
PYLON AUDIO
PIEGA SWITZERLAND
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Leica
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Sydney Audio Club
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BOOMERANG RECORDS
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ADVANCE PARIS
McIntosh
GROUND FLOOR
VIVID audio
Watsons Bay Room
MARCH audio
Lavender Bay Room
INDIE HI-FI
WILSON AUDIO
Grimm
Kirribilli Room
LOWER GROUND
INDIE HI-FI
Benchmark
MEZE
Fe
Executive Boardroom
Spring Cove Room
CLASSE
Bowers & Wilkins
audioquest
Shell Cove Room

Amber Technology
ROOM 23

Amber Technology will exclusively showcase the renowned **PSB Speakers**. Room 23 will serve as a haven for audiophiles to explore and experience the Canadian brand's latest offerings, many of which will be making their Australian debut at the show. Visitors will have the exclusive opportunity to be among the first to witness and immerse themselves in the newest advancements in audio technology. That sounds pretty good to us!

Audio Active
ROOM 10

Sony's QD-OLED TVs use the very latest OLED panels and are powered by the Cognitive Processor XR to deliver the ultimate in eye-popping clarity, the widest colours, near-infinite contrast ratios and perfect blacks. Matching Sony for clarity and accuracy in the audio realm will be **Theory Audio Design** from Orange County, USA, delivering a new level in high-output soundbars, and unique surface-mount home cinema speakers that work in combination with Theory's loudspeaker processors and controller in a unique and award-winning ecosystem you need to hear to believe.

Audio Magic / Krispy Audio / Space HiFi
ROOM 7 & 8

Melbourne-based Audio Magic won't be short of hi-fi gear to show off during the weekend, being the Aussie distributor for a number of the biggest names in high-end hi-fi. In collaboration with Krispy Audio, one room will comprise kit from **Kudos Audio, Lumin, Copland, Ayre Acoustics, VPI** and more, while its second room will, in collaboration with Space HiFi, showcase products from brands **Harbeth Audio, Bergmann Audio, Finite Elemente, Tellurium Q** and others. In the (not red, not blue, but headphone) corner are **T+A** and **Mark Levinson** cans to delight head-fi fans.

Audio Marketing
ROOM 2

Among the treasures in Room 2 will be the latest release in the wildly successful **Revival Audio** Atalante loudspeaker range. The newly revealed Atalante 4 teases its more tower-like build — a modern aesthetic, yet with the same Atalante engineering and French-built design details. The Atalante demos at last year's show were voted 'Best Sound' by many, and with power from Musical Fidelity's legendary amplification and more to be announced, this is a room you won't want to miss!

Avation
WATSONS BAY ROOM

Avation will once again be filling one of the show's biggest rooms with loudspeakers from **Vivid Audio**, the brainchild of Laurence Dickie, designer of the famed Bowers & Wilkins Nautilus. The South African manufacturer prides itself on its speakers' uniqueness, noting that almost no part of them can be found in any other. The brand has models from three ranges auditioning at the Australian Hi-Fi Show 2024, including the Kaya S12 which we couldn't find enough superlatives for in the previous issue's review, so come along and hear these amazing speakers for yourself. Not least as they will be driven by **PS Audio** amplifiers.

Boomerang Records
CONCOURSE

While you're enjoying the stunning sounds of the show, you will undoubtedly be inspired to take home a little black magic of your own by riffling through the racks of Boomerang Records' extensive record fair on the Level 1 Concourse near the show's entrance. There will be everything from high-quality second-handers to audiophile Half Speed Master recordings, ABBA through to metal!

GrooveWorks
ROOM 11

Celebrating its 20th anniversary this year, the Aussie distributor of America's **Telos Audio Design**, Taiwan's **Last** and others provides "highly effective sound enhancement products to the xxenthusiast". At the show, GrooveWorks will deliver a very refined and natural presentation from a system comprising components and accessories manufactured by some of the world's most innovative high-end audio companies. We hope to see the return of Telos's state-of-the-art Grounding Monster, which showcases

the importance of clean power and effective grounding to the achievement of realistic high-end sound.

Indie Hi Fi
BOARDROOM & KIRIBILLI

Indie Hi-Fi will be armed with jewels such as the **Wilson Audio** SabrinaX speakers, **AGD Productions'** Andante DAC/preamp and Audion 100-watt monoblocks, and the **Grimm Audio** MU1 streamer/server. It will also bring head-fi galore to a very special headphone auditioning room on the lower ground floor, including headphones from **Raal Requisite, ZMF, Meze** and **Dan Clark Audio**, and partnering electronics from **HoloAudio**, **Ferrum**, **Benchmark** and **Dethonray**.

Halcro / Duntech / Döhmann
FARM COVE ROOM

This extraordinary audio suite will host a remarkable Aussie supersystem. At the helm is **Duntech**'s flagship Sovereign speakers — a seven-driver system with the drivers symmetrically arranged on a vertical axis and time aligned, acknowledged by experts as the finest in the world. The power comes from **Halcro**'s very latest reference amplification, a triumph of form and function, unique in its imagination of what an amplifier is and how to push the boundaries of technology. And the third Aussie legend? Analogue playback courtesy of a **Döhmann** Helix turntable, engineered to deliver unparalleled analogue performance and the result of many years of research and development.

Hi End Audio
ROOM 18

Distributor Hi End Audio's comprehensive portfolio features some of the very best in high-end hi-fi from around the world, with internationally famed audio brands such as **Boulder, Vitus, TAOC, AudioSolutions, SoulNote, Stillpoints, SBooster, Gigawatt** and **Silent Angel** among the many jewels in its very ornate crown. Last year's show attendees were treated to a sublime showcase of stereo sound inside the walls of Room 18, so we don't expect anything less this time round.

March Audio
LAVENDER BAY ROOM

Western Australia's **March Audio** was acclaimed at the 2023 show for delivering one of the best-sounding rooms — despite its system being a fraction of the price of many others being demoed. They will be back for 2024 with their latest wares — loudspeakers, amplifiers and cables — all proudly hand-built in Albany, WA, and delivering "superb technical performance and sound at modest prices". They will also be debuting the new Pre1 Pre amp and new P801 power amps. This will no doubt prove a popular room.

Masimo Consumer
ROOM 6 & SPRING COVE

Following its room's winning sonics last year (and not forgetting its Abbey Road photo wall), Masimo Consumer Audio is back with its extensive portfolio of audio excellence, featuring **Bowers & Wilkins, Denon, Marantz, Polk Audio,** and **Classé**. Too many brands for one room, which is why it has two: one in Room 6 on Level 9 to showcase two affordable but thrilling systems from Denon, Polk, Marantz and B&W. A special highlight will be the brand-new Marantz Model 50 paired with the CD50n network CD player — the ultimate one-box digital source. The systems will be elevated by the very best cables by AudioQuest, too. Meanwhile in the Spring Cove Room, Bowers' flagship 801 D4 Signature loudspeakers will be on demo, driven by top-Classé amplification!

Leica / MaxMedia
PORT JACKSON ROOM

Leica will be lighting up the show with its Cine 1 Cinema TV, the ultimate in console design and big-screen, 4K TV-style projection. Expect a complete entertainment system with immersive Dolby Atmos surround sound by **Piega** and unmistakable Leica quality. These dazzling images will also be complemented by a host of hi-fi kit distributed by MaxMedia, including the **Avantgarde Acoustic** Duo horn speakers; **Fezz**'s all-new DAC, phono stage and pre-amp; **Innuos**' full range of servers and streamers; **Pylon**'s Jade and Jasper speaker series; **Cos Engineering**'s D10 V3 DAC, pre and headphones amp; and plenty more besides!

Proudly distributed in Australia by Avation. For more information visit **www.avation.com.au**

Mcleans Smarter Home Entertainment ROOM 9

Having opened in 1982 as what was then one of Australia's first 'audio visual' home entertainment stores, located in The Entrance, NSW, Mcleans Smarter Home Entertainment is now a Central Coast-based retailer and distributes an exclusive handful of brands, including **Auralic, DeVore** and **Rogue Audio**. Mcleans plans to demonstrate precisely what a well-planned and well-priced hi-fi system can achieve, with kit such as the Auralic Altair G2.1 music streamer, a Rogue Audio pairing of its RP-7 preamplifier and Stereo 100 power amplifier, and DeVore Fidelity's Orangutan O/96 loudspeakers.

Microphase Audio Design ROOM 3

The Sydney speaker manufacturer will make the short journey to the show, armed with a suite of its dinky loudspeakers. **Microphase Audio Design** models are handcrafted in Australia with French flair, their core design forte being small speakers that, in the brand's words, "sound incredibly good on their own and have a reputation to have one of the best midranges in the world". "They reproduce instruments' timbres with accuracy and speed thanks to their very inert marine grade birch plywood cabinet and bespoke drivers mostly sourced from famous French manufacturer Audax."

Purasound ROOM 22

Brisbane-based PuraSound, which represents an eclectic assortment of high-end hi-fi brands in Australia, from Cyprus's **Aries Cerat** to Spain's **Alsyvox** and Canada's **Luna Cables**, will be demonstrating a highly unique system in Sydney. At the helm will be Alsyvox's Tintoretto ribbon planar dipole speakers — making their Australian debut no less, and also introducing itself will be Aries Cerat's Aperio integrated amplifier, with innovative TriodeFet technology at its core. That formidable pairing will be complemented by Aries Cerat's thaka DAC (also featuring Triode-Fet technology) and **Pink Faun**'s 2.16 Ultra digital server/streamer, with cables from Luna Cables and Norway's **Skogrand Cables** and Isolation by Poland's **Stacore** completing the system.

Richter ROOM 19

Thanks to the work achieved last year with the development and launch of its Special Edition models, the Excalibur S6SE and Wizard S6SE, **Richter** is now taking the performance of the Series 6 range to a new 'Plus' level, with Series 6plus versions of the standmount Merlin, smaller floorstanding Harlequin and larger floorstanding Wizard (a review of which can be found on page 56). But its biggest news is the arrival of a brand-new model, which is perhaps its most versatile speaker ever: the Unicorn S6plus centre speaker. "This new Unicorn will be a Richter first and a truly unique and versatile speaker allowing for numerous configurations via its switch modes," says Richter's Brian Rodgers.

Secret Chord Analogue ROOM 1

With the tagline "get more from the music you love", **Secret Chord Analogue** makes its Australian Hi-Fi Show debut and invites attendees to engage with the company on a personal level through a different hands-on experience on each day that will cover record restoration and turntable set-up. The emphasis is on providing audiophiles with practical and meaningful interactions with the showcased products and services, which include the 'Record Restore' vinyl record cleaner, the 'Turntable Whisperer' bespoke service for restoring or refurbishing record players, and the 'Amp Camp' interactive tube amp-building experience.

australian hi-fi Show SYDNEY 2024
SEE US IN ROOM 19

Series 6 plus

Re-defined, making our best even better!

The exciting Series 6Plus range includes tech developed for our Premium Special Edition range to take your Entertainment experience to another level, in either 2 channel and now Plus, the arrival of the Unicorn S6Plus LCR speaker enhancing any Home Theatre system.

Contact your Nearest Richter dealer now to audition one of the S6Plus range and take your Entertainment experience to another level.

For more information and to find a dealer
visit www.richter.com.au

richter

Serhan Swift ROOM 12

Sydney-based **Serhan Swift** combines the complementary skill sets of speaker designer Brad Serhan (who founded Orpheus Loudspeakers in 1984) and engineer Morris Swift — and with their 100 years of combined experience, they have produced a series of acclaimed 'mμ' speakers, culminating in the very latest Serhan Swift mμ2 Mk II, which were heralded as "exceptional" in the previous issue of *Australian Hi-Fi*. Last year Serhan Swift was up at the top of the best-sounding room nominations, so don't miss hearing the heights to which the new mμ2 Mk II can rise.

Stereotech ROOM 20

Designed and manufactured in the Stereotech facility in Brisbane, loudspeaker brand **Dellichord** will launch two brand new models at the show, the FR35 bookshelf monitor and FR2035 IsoActive System, as well as show off its award-winning FR6 isobaric standmounts (reviewed on page 28). The FR35 is a totally modern and updated homage to the classic LS3/5a, while the FR2035 offers a completely different aesthetic and sound, incorporating a twin 10-inch isobaric, active bass module and the FR35 bookshelf speaker. These will be seen and experienced for the first time ever. Stereotech will also be displaying its range of acoustic treatments, equipment racks and loudspeaker stands again this year, with a variety of styles, colours and finishes.

Synchronised Technology CONCOURSE

The Australian distributor for **Beyerdynamic**, a brand celebrating its 100th birthday this year, will be at the show loaded with fine headphones from the German company's diverse and budget-spanning catalogue. Hear the sounds and discover the reason that professionals choose Beyerdynamic for broadcast, film and stage applications, and how those technologies transfer into stunning consumer headphones for home and away.

Synergy Audio Visual ELIZABETH BAY ROOM

Be sure to set aside time to spend in the Elizabeth Bay Room this year. Melbourne's premier distributor will be debuting its latest brand, **Advance Paris**, alongside its established catalogue of hi-fi greats — **McIntosh, Sonus Faber, Audio Research, Aurender, ELAC**... the list goes on. Advance Paris is an electronic brand from — you guessed it — France, with a 'something for everyone' catalogue that is new to Australia. Its eclectic component range starts below $1,000 and soars to beyond twenty times that, and should delight fans of analogue VU-meter aesthetics and valve performance. You may remember our glowing review of the brand's A12 amplifier in the previous magazine issue.

Wavetrain Cinemas SHELL COVE ROOM

It was the biggest and most spectacularly audiophile home cinema experience of the show last year, but this year Wavetrain is planning something different: the **Elementi Audio** digital active speakers it exclusively uses for its high-end installation projects will this time face the ultimate challenge of playing as an audiophile stereo system, in a venue where they'll be heard alongside the best two-channel hi-fi on the planet. Gutsy!

Yamaha Music ROOM 4 & 5

One of last year's showstoppers was the early preview of **Yamaha**'s groundbreaking YH-5000SE headphones and accompanying HA-L7A headphone amplifier, which will return to Sydney once more. The headliner this April, however, will be a stunning stereo showcase of Yamaha's flagship 5000 Series components, helmed by the NS-5000 speakers, driven by the C-5000 preamp and M-5000 power amp combo, and fed by the GT-5000 turntable. In the next room will be two less discernible but still highly premium setups from the company's 2000 and 3000 Series. Components from the latter will show there's still life in the Compact Disc yet, while speakers and a streaming amplifier from the former will be glossy adverts for modern system convenience. The youngest in the 2000 Series, the R-N1000A stereo network receiver and NS-800A bookshelf speakers, will also be in tow.

The Hi-Fi Headlines

LEN WALLIS AUDIO®

NEWSLETTER NO.267

What's new at Len Wallis Audio.

Revival Audio Atalante 4 speakers.

This industries hottest new release in decades has been Revival Audios speakers out of France. Their Atalante 3 and Atalante 5 models have been an extraordinary success – winning awards and garnering glowing awards worldwide.

We have just received their new Atalante 4. This largish floor-standing speaker is a departure from the earlier models in this range, which are both stand-mount speakers (albeit the Atalante 5 is a large example of the genre). The Atalante 4 also exhibits a slight departure sonically.

First and foremost, this is an excellent loudspeaker, one that offers exceptional value at $7,700. During my initial listening sessions I found myself making mental comparisons with speakers costing three times as much!

The Atalante 4's displays all the hallmarks that have made the '3 and '5 so desirable – including their meticulous approach to build quality. Their much lauded 'imagery' is evident, as is their sense of tonal 'balance'.

Where I do find the Atalante 4 a slight departure sonically is the pure grandeur of the performance. This speaker presents a very large, and very involving, sound field. While not losing any of the pin-point imagery that Revival is renowned for the Atalante 4's creates a sound stage extending way beyond the speakers themselves. While they will work in a smallish room (my listening was done in a room 5mts x 3.5mts) they will easily fill a far larger listening environment.

You are going to hear a lot more about the Atalante 4 in the coming years – value such as this does not come our way often.

….And speaking of value for money:

This month (April) we will receive our final shipment of the Rega Planar 3 50th Anniversary Edition turntable. Based on the ever-popular Rega Planar 3, this limited-edition turntable is now out of production. The Panar 3 50th is much more than a fancy commemorative badge (although it does have one). Firstly, it has a distinctive walnut plinth. It is supplied with a Neo PSU Mk2 external power supply (normally a $549 option), the reference EBLT belt, a custom manufactured CNC'd aluminum drive pulley and comes fitted with their Exact moving magnet cartridge ($650).

The Planar 3 50th Edition is selling for $1,899, only $450 than the current Rega Planar 3 (without cartridge). This is exceptional value for money, particularly considering the value already offered by the turntable it is based on.

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The Australian
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W5800

Diary of a dedicated hi-fi reviewer

Writer and photographer: **PETER XENI**

Few people can claim to have promoted the audio industry in Australia as much as Herald and Weekly Times editor Peter Familari.

Evidence suggests it's not an inflated claim. It was Rupert Murdoch himself who asked about his consumer supplement on a fleeting visit to check his accounts. He noticed a ledger filled with new advertisers and swollen with lucre. "Who's the bloke behind this audio and electronica advertising?", he reputedly asked, while seeing they had come from his archival, *The Age*. He was told the byline belonged to the diminutive history master turned journalist four floors beneath him on Flinders Street.

He brusquely complemented his section editor with a simple "good work," grinning and rewarding Familari with a pay rise. Paying a single cheque for the dual talents of a popular audio/consumer goods columnist-cum-marketeer had clearly won Murdoch's heart.

From the early 1980s until his retirement 30 years later, Familari proudly and humbly nurtured a dormant industry that had been ripe for a renaissance when he joined the HWT.

The centrepiece of this action was 'Sound and Vision', the consumer supplement he launched as its inaugural editor.

The aspiring academic and journalist, better known as 'Famo', had the idea for this consumer megaphone some years earlier. Finally, after haggling for senior approval, he was able to charm advertisers into the *Herald Sun*'s voluminous pages and readership of 1.25 million. The highest circulating publication of any kind in Australia, it's claimed.

He later expanded the 'Sound and Vision' pages into consumer goods, electronics and TVs. He also claims to be the first reviewer in the southern hemisphere to test the newly introduced Plasma TV, one of many televisual innovations of that time.

In a major coup in 1998, he convinced the HIA (Housing Industry Association) to include the supplement, with its expanded format, into its annual marketing campaign at the Melbourne Convention and Exhibition Centre (colloquially known as 'Jeff's Shed' after Victorian Premier Jeff Kennett).

For this and other achievements, including a stint at StereoNET, Familari received the coveted StereoNET Lifetime Achievement Award in 2021 and the praise of renowned international reviewers like Michael Fremer and Ken Kessler.

For all his success, his early life was not all beer and skittles. A serious motorbike accident on the Tullamarine Freeway nearly ended it. After a long recovery, he continued his multiple academic studies to become a school teacher. He cheerfully accepted positions in tough working-class schools, having worked his way through a career as a sheet metal worker, truck driver, dishwasher, and part-time salesman in hi-fi stores.

Finally, he got his break. A hi-fi friend and senior journalist at *The Age* asked him to write occasional audio articles for the popular *Green Guide*, the very publication he and audiophiles read ardently. Alex Encel, its audio columnist, and Familari soon became firm friends and were original members of the Melbourne Audio Club, which recently celebrated its 50th anniversary as the oldest continuously running audio club in the world.

"I'm proud to say my initial article was the first subjective audio review in Australia," he said. "I put 30 years of audio knowledge into that review and it was well received by the Melbourne audio

When reviewing, one must ask: 'why does a component move you so deeply, so spiritually?'

community. Moreover, it fired my ambition to become a regular writer on audio."

With great detail, he wrote a comparative review of a select handful of cartridges, based on the subjective style of the English magazines of the 60s — a style he greatly admired. At the time, he says, music was booming with the Beatles and Stones and yet audio mags were staffed by suitably qualified but stuffy electronics engineers who measured everything and understood very little. Suddenly there was a new terminology to describe the hi-fi experience: instead of inscrutable technical language, there were terms like 'soundstage', 'sibilant', 'front to back depth' and 'boomy' — a whole new vocabulary the public could understand.

THE INTERVIEW

Peter Xeni: When did this consumer-friendly audio language develop, and in which mags?

Peter Familari: It was the English who developed the language in their late-60s magazines — *Practical Hi-Fi*, *Hi-Fi Answers*, *Hi-Fi News* and *Record Reviews*. Audio legends such as Paul Messenger, Chris Rogers and Dave Berryman (the speaker developer) employed this descriptive approach to assist the listener without he or she needing electronic diplomas.

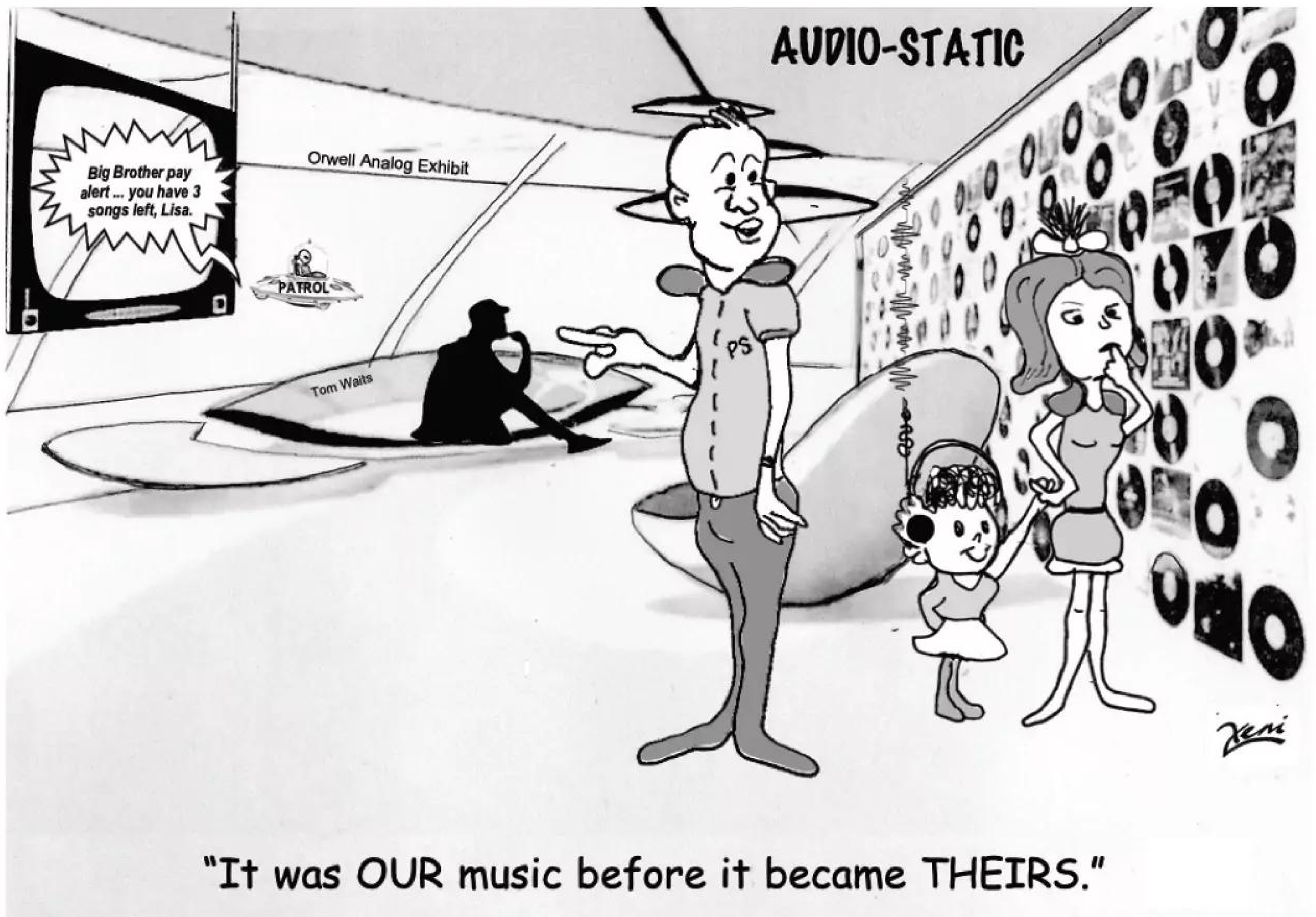
They reviewed componentry subjectively, as opposed to the exactitude approach, and told the potential buyer: 'This is what I heard as an experienced reviewer, not what I measured. It's my opinion.' They empowered the reader to make their own decision, and that was my aim.

If someone experiences one view about listening to a cable, you can file that under 'subjective experience', but when 20,000 people report the same response it becomes an 'objective fact' that the objectivists such as the developers or electronics nerds can't erase.

Why is audio reviewing a minefield, attracting conflicting opinions?

Understanding the physiological or psychological impact of experiencing an emotive piece of music is beyond science. There are limits to our language, and there are limits to our science.

Music works on your senses, on your body, and most saliently on your brain. Oliver Sacks proved it with case studies in his marvellous book, 'Musicophilia'. Hence you get differences of opinion, linked often to life experiences. A



Peter Familari (left) and friend Michael Main are both proud owners of Quad's ESL-57 electrostatics.

song can trigger memories, good and bad. Great hi-fi can best manifest those experiences.

So what is your philosophy in audio?

I'm a great fan of reason and logic. After years of humanities and pre-PhD studies, I am someone who believes we should not adhere to the 'concept of absolutes'. In audio, there are things we don't know, and things we will never know. Science, in time, will provide a pretty fair, rational and acceptable explanation in objective reality. But when reviewing, one must ask: 'why does a component move you so deeply, so spiritually?' That falls into the category of 'we will never know'.

If you don't value exactitude so much over subjectivity, doesn't that lead to falsehoods of conflicting opinion?

A Marxist philosopher, Georg Lukács debunked some popular philosophical myths. He said famously, for example, that some philosophers have argued that a table you're sitting at doesn't really exist, but the reality is if you're stuck on a tram track you are going to get hit! He coined the phrase, 'reality has an intrinsic order of priority'.

And now let's apply this to the listening experience: you have an audio system that is ostensibly providing 'an objective reality'; you have a listener, who to other people is providing an objective reality... but that actual listener who is listening to that objective audio system is inhabiting a world of subjectivity. We know very little about that aspect, and even less about that person's subjective interaction with that audio system. We don't have equipment to measure that. How do we know what is going on inside? The human body and mind are incredibly complex, and so too is the hi-fi experience.

You've said previously that after 60 years in audio, 'you don't just experience music with your ears alone; your entire body/mind is involved'...

True. They can't explain why some cable or some cartridge sounds very different from another despite measuring the same on the test table.

So where are we headed in audio?

Well, allow me first to wrap up the audio industry, with its contemporary reviewers and equipment designers; where they're unintentionally misleading readers, where designers are unintentionally designing sterile-sounding equipment, and where engineers are doing the same. The reason is that they don't understand the legacy — the analogue experience: the tube amplifier, turntable and cartridge. They don't have a point of reference; they won't get it. They are brain-wired for the synthetic sounds of digital.

I think it's best demonstrated by Karajan's Beethoven symphony cycle. He recorded one cycle in each decade, with his final 1980s iteration, the hi-fi one, making his '60s mahogany version sound like shiny steel. It was a monumental failure on all levels.

You have made the point ... 1984. The year of the digital revolution. The CD. The Big Bang.

Hi-fi sold its soul to the IT industry. The modern recordings privilege detail and false neutrality and transparency, not soul and timbre; they've lost the plot.

If solid state wasn't bad enough, digital was complete poison. Music stopped being music. It became 'data'; the language of computers, in other words.

We older audiophiles think that internet streaming and MP3 downloads turned audio and music into a commodity. Imagine if Sgt. Pepper's was released now — it would just be another soulless download, nothing tangible...

It's a sad state of affairs and we're heading down that dark tunnel to ennui and oblivion.

So how did the snake-oil salesmen make an entry when the objectivists ruled?

The audio boom in the 70s opened the market, and with the excitement of subjectivism it allowed them to become part of the reviewing process. These subjective types, who were the revolutionaries of yesteryear, became the 'flat Earthers' of today. They were embedded in the cult of Linn, Naim and Rega, and this is where Pearson and Kessler introduced McIntosh, Audio Research, Conrad Johnson and Goldmund, and breathed fresh air.

I knew of one guy who claimed that his wedge of treated paper improved the sound of his turntable when it was placed under its feet. That sort of thing thrived.

I see you have Van den Hul equipment. His gear measures and sounds great!

My son Nicholas now imports A.J. Van den Hul's products and distributes them throughout Australia and New Zealand via his Sound and Vision Group.

A.J. ("yes, please call me that") is a former university physics lecturer, audio pioneer, audio reviewer, cartridge and cable manufacturer, medical researcher, healer, humanitarian, environmental activist, humanist and philanthropist.

That's a mouthful, Famo...

I know that, but he's one of the few designers today I admire. He doesn't market, and he's scrupulously honest donating his philanthropic skills to society, especially to MS research.

So how do audiophiles now get their information?

People look to forums for product information. Of all contemporaries, I admire the late Art Dudley and Ken Kessler. They loved legacy equipment to have a reference point. Art owned a Thorens 124, Ortofon SPU and Quad 57s. Fine equipment.

You've owned those components?

Myself and my well-known lawyer friend and fellow audiophile, Michael Main, who is here at this interview, are proud owners of the Quad 57s. [And so too is this interviewer.]

FAMO'S CURRENT HI-FI

Source (analogue): Goldmund Reference Turntable with an Alphason HR 200 12-inch tonearm and Van Den Hul Crimson Stradivarius cartridge

Source (digital): Audio Research CD5 CD player

Amplifiers:: Krell KSA-250 and Audio Research D76

Speakers: Wilson Audio Sasha, Quad ESL-57, Rogers LS3/5A

Cables: Van Den Hul The Mountain XLR interconnects and Cumulus speaker cables

DS Audio DS 003

Optical Cartridge

+
- Exceptional resolution and clarity
- Strong dynamics and bass

−
- Doesn't work with conventional phono stages

RRP **$9,995**

1948 was a big year for fans of analogue. The long-playing (LP) record that we know and love was launched then, as were the first moving-magnet and moving-coil cartridge designs required to play it. To this day, the two cartridge types still dominate to the extent that it would be easy to think that there was no other way of doing that specific job other than by having a small magnet move relative to a coil or *vice-versa*.

DS Audio would beg to differ. The company isn't the first to design an optical-type cartridge. There were examples from the likes of Toshiba, Kenwood, Trio and Sharp decades ago, but these failed to catch on for reasons both technical (excess heat from the internal bulbs) and commercial (by the late 1970s, the big manufacturers had started to divert resources towards new technology such as CD). Still, the *idea* of an optical cartridge certainly retained much promise.

BUILD & DESIGN

The advent of LEDs is fundamental for DS Audio's cartridges to work. In the DS 003 optical cartridge are two small infrared LED lamps — one for each channel — and a matching pair of light

detection photocells. While the DS 003 has a pretty conventional aluminium cantilever (and line contact stylus tip), rather than the cantilever being attached to a magnet (or coil) as it would in a conventional cartridge, here it has a 'shading plate' instead, positioned between the LEDs and the photocells.

As the stylus traces the bumps in the record groove, this shading plate moves in sympathy and the photocells detect any change in brightness from the light received from the partnering LED. That change in light brightness represents the music signal.

The advantages of such a design are obvious. The mass of the DS 003's shading plate, now made of Beryllium rather than the aluminium of the previous-generation model, is much lower than a typical coil or magnet, so the stylus tip can track the bumps in the record groove with more agility and accuracy. Also, there are no unwanted internal magnetic effects generated, as there would be in conventional set-ups. The result should be better sound quality.

There are complications, though. While heat is no longer a hurdle, as LEDs produce so much less than the bulbs used in those early designs, the cartridge still needs power for those LEDs — and of course, the electrical output from those photocells is very different from that delivered by a conventional cartridge in terms of the relationship between stylus tip movement and electrical output generated.

All this means that the DS 003 can't be plugged into a conventional phono stage. You must therefore think of the DS 003 and the partnering equaliser box pictured above as a package, where the box works as a phono stage and power source for the cartridge. That power is fed through the tonearm cable.

Despite its technological differences, the DS 003 package doesn't feel any different to use than a conventional set-up. The cartridge is a little bulky but balances out well on a Technics SL-1000R's tonearm and tracks nicely at the recommended 2.1g downforce. Once everything is in place, it's very noticeable that background noise levels are very low. Indeed, even the quietest of typical set-ups often generate more in the way of hiss and general background hash than this.

The rest of the system used for this review is a Burmester 088/911 MkIII amplifier driving ATC

> ... when it comes to clarity and precision there isn't anything better anywhere near this price level

Compared to the DS 002 equaliser, the DS 003 box has a thicker circuit board, thicker copper foil and allows you to select from four cutoff frequencies for the lower region

SCM 50 speakers. There are also Wilson Benesch A.C.T. 3Zero floorstanders and Kerr Acoustic K300 Mk 3 standmounts on hand as alternatives to the ATCs. The test reference cartridge/phono stage combination is Kiseki's Purpleheart moving coil feeding Cyrus's Phono Signature/PSX-R2 phono stage, which weighs in around the same ballpark as the DS 003 package price-wise.

LISTENING SESSIONS

The two combinations sound surprisingly different. By conventional standards, the Kiseki/Cyrus pairing is crisp, clean and ever so detailed, but it is made to sound a little hazy and congested by the DS Audio combo. There are no two ways about it, when it comes to clarity and precision there isn't anything better anywhere near this price level. The DS Audio DS 003 package defines the leading edges of notes superbly. There isn't any hardness or undue emphasis; it just sounds bold and natural.

The DS Audio pairing is such a great all-rounder. Listen to Bob Marley's *Concrete Jungle* and it's hard not to be impressed by the bouncing articulate bassline and the sheer amount of grunt produced in this region. Low notes dig deep and true but pleasingly remain richly textured and wonderfully agile. Punch and attack? There isn't a problem here either, as it treats me to a performance that sounds bold and muscular without going over the top. There is a strong sense of rhythmic momentum and plenty of cohesion from the lowest frequencies upwards.

Marley's voice comes through with passion and natural warmth, remaining easy to follow even when the music becomes busy. There isn't a shortage of refinement either, with the highs coming through with enthusiasm and bite without getting aggressive.

Moving to Beethoven's *Ninth Symphony* shows the DS Audio's balanced tonality and its ability to track a multitude of instrumental strands without confusion. Large-scale dynamics are rendered with enthusiasm and an impressive degree of authority, yet there is enough in the way of finesse to prevent things from feeling ham-fisted. Some listeners may prefer the more comfortable and sweeter presentation of the Kiseki/Cyrus duo, but as you go through record after record it's easy to form a clear preference for DS Audio's way of doing things. It is more insightful, more expressive and, ultimately, more fun to listen through.

CONCLUSION

Clearly, this is a huge amount of money to spend on a cartridge/phono stage combination, but in performance terms it is outstanding. The scary thing is that the DS 003 combo sits fairly low in the company's hierarchy, which makes one wonder just how much better the performance can get! Still, even as it stands, if you have a record-playing system that justifies this kind of expense, you owe it to yourself to have a listen to this DS Audio package. It really is hard to beat for the money.

TECH SPECS & CONTACT

Brand: DS Audio
Model: DS 003
RRP: $9,995
Cartridge type: Optical
Cartridge nominal tracking weight: 2.1g
Cartridge weight: 7.7g
Equaliser dimensions (hwd): 9.2 x 33 x 29.5cm
Equaliser weight: 5kg
Distributor: Absolute Hi End
Address: PO Box 370, Ormond, Vic 3204
T: 0488 777 999
E: info@absolutehiend.com
W: www.absolutehiend.com

richter
richter

Richter Wizard Series 6Plus

Loudspeakers

+
- Impressive bass
- Superb tonal balance
- Excellent mids & highs

−
- 'Goldilocks' port puck
- Two cabinet finishes only
- Not bi-wirable

RRP **$2,899**

You know that a loudspeaker design has achieved iconic status when audiophiles discussing it don't mention the name of the manufacturer but just the model name (or number) of the speaker itself. Which means that Richter's Wizard speakers have achieved that status because they're almost always referred to simply as 'Wizards'.

It could be argued that one reason behind the Wizard design gaining such prominence is due to it having been on the market for close to 40 years in one incarnation or another. Another reason might well be the number of awards it has garnered over that time. Yet another may be that, according to Richter at least, more Wizards have been sold in Australia than any other loudspeaker designed in this country.

Curiously, despite the many significant changes between this latest Series 6Plus version of the Wizard and the Series 6 variant that preceeded it (which I'll detail later in this review), Richter has settled on the '6Plus' moniker rather than what I believe would have been the more obvious choice — 'Series 7'.

One thing that has risen inexorably, along with the model numbering, is the retail price of the Wizard, but according to Richter's Brian Rodgers, the company has pulled out all stops to keep the price as low as possible. "The fact that the new WS [Wizard Series] 6Plus speakers are only $200 more than the previous S6 model is quite astounding… or maybe foolish in today's world of increasing costs!" he said.

THE EQUIPMENT

One thing that hasn't changed on the new Series 6Plus model compared to the 'standard' Series 6 design is that the two mid/bass drivers are configured in a 2.5-way arrangement. This means that both drivers work in unison to produce low frequencies, but only the uppermost driver operates to deliver the midrange. The beauty of this approach lies in the advantages of having an increased cone area, higher efficiency and greater power handling at low frequencies, as well as the benefits of having a 'point source' for the sound at mid frequencies — better stereo imaging and an overall more realistic sound.

While you might imagine that any loudspeaker using two mid/bass drivers might take advantage of such an arrangement, the unfortunate truth is that most manufacturers do not; they simply connect the two drivers in parallel so that they both operate over their entire designed frequency range. With this method, the crossover network is less complex (and thus less expensive to manufacture) and also allows manufacturers to use lower-cost drive units.

The Wizard S6Plus shares the same higher power tweeter that was developed for the Wizard S6SE and next-level-up Excalibur S6SE flagship model.

Of course, it would be better to go the full, 'pure' three-way route — two dedicated bass drivers handling the low frequencies and a third driver solely devoted to mids (plus of course a single tweeter for the highest frequencies) — but this requires a considerable increase in cabinet size, and greater component costs and manufacturing complexity, all of which push the price (and size!) of three-way designs beyond the comfort zone for most loudspeaker buyers. Finding a similar design in Richter's line-up would have you investigating the Excalibur S6SE, which is a five-driver, 3.5-way design and so actually steps up a little from a standard three-way in terms of crossover design and the fact it has *two* dedicated midrange drivers, mounted MTM-style around a central tweeter.

But going back to the Wizard Series 6Plus' drivers, the two mid/bass units are exactly the same diameter as those used in the Wizard Series 6 design (which were slightly larger than those found in the Series 5). They also use the same unique pulp mix for the cones, comprised of paper, hemp, kapok, wool and engineered chemical fibre — and, just in case you were wondering, you cannot smoke it! Richter says it chose these materials to ensure that the cone is extremely lightweight and stiff, qualities that are important in minimising the effect of cone breakups and roll-off resonances. However, the company says that the drivers' magnetic system in this new model has been redesigned to make the drivers' response considerably more linear, particularly across the 1kHz region, and that there has also been a 10% reduction in nonlinear distortion compared to the previous model. This supposedly delivers 'a smoother cleaner performance where it matters'.

The Wizard Series 6Plus' 25mm soft-dome tweeter is not exactly new as it's the same one Richter developed for its Wizard Series 6 'Special Edition' range, but it *is* different from that on the standard Series 6. According to Richter, the 'SE' tweeter has 'improved sensitivity, a lower resonance frequency and double the power-handling ability, resulting in a new level of clarity and engagement'. Its appearance is enhanced by a shiny edge trim around the mounting plate which is designed to harmonize with the trim around the two Richter badges, which can be found on the grille and on the cabinet itself (so you'll still see a badge if you don't use the grilles).

> …more Wizards have been sold in Australia than any other loudspeaker designed in this country

The improved mid/bass drivers and 'borrowed' tweeter meant that Richter's designer, Martin Gosnell, had to redesign the crossover network. Rather than reinvent the wheel, he instead reworked the network he'd designed for the premium Wizard Series 6SE, except that he omitted that design's bi-amping capability. Therefore, the crossover network in the Wizard Series 6Plus uses high-quality acoustic polypropylene caps with air-cored and ferrite-cored inductors for the uppermost driver and tweeter, and a large separate laminated-core inductor for the lower driver.

The Wizard Series 6Plus cabinet has the same dimensions as the older model — 96.5cm tall, 22.1cm wide and 35.9cm deep — and is available in the same two Matte Black and Walnut finishes. It's still a rear-firing bass-reflex design, but whereas the older model came with only a single port plug to convert the ported bass reflex cabinet to a sealed cabinet, the Series 6Plus comes with an extra port plug that, if used, blocks off only about half of the bass reflex port. Rodgers says: "The Wizard Series 6Plus now also comes with an additional bass port foam puck which provides an ideal middle-ground bass response catering for different room sizes and conditions as well as the user's preferred taste. It's the Goldilocks effect: when having the bass plugs inserted reduces the bass response too much, but the bass response is too energized when there are no plugs, inserting the new bass port puck (which is designed to be inserted sideways) provides the perfect middle ground."

It must be said that many loudspeaker manufacturers provide exactly the same 'half-bung' option, but most do so by providing a single 'two-part' plug, where a separate 'slug' in the centre of the foam plug can be removed. Richter's implementation is more like one that the fabled Heath Robinson would have designed; it's neither elegant nor pretty... but it works!

Also far from pretty are the outrigger feet that improve the sturdiness of the fairly tall Wizard Series 6Plus, elevating their stability to what Richter says is 'furniture-industry standard'. One reason they aren't exactly lookers is down to them having slots for the mounting screws rather than holes. This allows them to either be retro-fitted to older Wizard designs that weren't supplied with outrigger feet, or to floorstanding models from other manufacturers (which is why they are available for separate purchase). So if you already own tall floorstanders that don't have their own outrigger feet for improving stability, I'd encourage you to see if Richter's fit and, if so, buy them.

The outrigger feet not only increase stability but also make it easier to adjust the tilt of the cabinet, should you wish to aim the tweeters at a specific point in the room, and also to level the speakers if your floor is not perfectly flat. I should say that the front-most outrigger has been upgraded to further improve stability, too. Whereas previously it was straight, it now has an almost boomerang shape, which I guess is very appropriate for an Australian design!

Richter also provides two sets of feet to screw into the outriggers — metal spiked ones (along with protective floor pucks, should you need them) and soft conical rubber ones.

IN USE AND LISTENING SESSIONS

Since Taylor Swift was in town when this review was being written, I felt compelled to start my auditioning with her 'Midnights' album from 2022. It was also suitable as I wanted to experience how much the bass response had improved on the new Wizard Series 6Plus, and there's certainly a lot of bass on that album. Right from the opener, *Lavender Haze*, I could hear — and feel! — the impact of the track's thumpingly deep bass throb. Yet despite the all-pervasiveness, Taylor's voice was fresh, clean and unadorned up in the midrange, so the sonics were perfectly separated. I was also captivated by how clearly the Wizard Series 6Plus revealed that the sound of the snare drum is the real thing, whereas pretty much everything else on the track issues from one or more synthesisers.

On *Maroon*, the synth bass is even lower-pitched, but the Series 6Plus still came to the party and delivered the goods. This track also served to show how well the Wizards distinguished the tonal qualities of Taylor's voice from those of Zoë Kravitz (which they did yet again on *Snow on the Beach*, though this time around with the under-utilised voice of Lana Del Rey.) Sandwiched between these two tracks is the stunner that is *Anti-Hero*, a perfect example of the superiority of Swift's songwriting abilities and lyrical skills. On this track I also heard how superbly the Wizard Series 6Plus handled the myriad sibilances incorporated into the lyric — indeed there are so many words with the letter 's' that I wonder whether it was actually a personal challenge she set herself to include them, or the result of a bet! Irrespective, whereas you'll simply hear 'hissy' sibilances from lesser speakers, the Richters deliver them cleanly and without any

Richter's Brian Rodgers (left) with Senior Engineer Dr Martin Gosnell at the Australian Hi-Fi Show 2023.

overlay so that I was barely aware they were there — proof positive that the new tweeter in is a definite upgrade over the old! (You can also hear perfectly how she transitions from singing *'snow at the beach'* to *'snow on the beach'*, such that I wondered why the changes existed.)

I auditioned real bass instruments with various albums from Queens of the Stone Age, one of my favourite bands not only for their music but also the titles of their albums. I mean, you have to love titles such as 'In Times New Roman', 'Songs for the Deaf' and 'Lullabies to Paralyse' — and don't get me started on the song titles! The hard-hitting bass lines and percussion on *Paper Machete* were delivered raw and unadulterated by the Wizard Series 6Plus, as was the trademark scream of Josh Homme's guitar. But if you want bass innovation along with great bass sound (and terrific syncopated percussion), *Negative Space* should be your go-to track on 'In Times New Roman' — it's a masterpiece of understated stoner rock, though the same is also true of *Time & Place*. But the standout on that album is *Emotion Sickness*, and if listening to its intro through the new Wizards doesn't knock you for six, I don't know what will!

> ... the pianism of *Pour le piano*. The fleetness of, and power in, his fingers were made perfectly clear...

I went from sublime album titles to ridiculous ones by switching to Ed Sheeran who, much as I love his music, lyrics and politics, does not have a clue about album titles. That said, I think Richter could have adopted his album's use of the symbol '+' for the naming of this latest Wizard iteration, rather than spelling it out! All of which is the long way around of explaining how the track *The A Team* came to be coming softly and sweetly from the Richters. The song's lyric is anything but sweet dealing as it tells the story of a young girl selling herself to finance her drug addiction (*'struggling to pay the rent/long nights/strange men'*). The ballad is beautiful nonetheless, as is Sheeran's acoustic guitar and voice, which were accurately delivered by the Wizards within an intimately realistic presentation. It's only a pity he doesn't apply his talents to weighty topics more often (as Swift does, since we've mentioned her), though to give him his due he has given his public support for many serious issues, including the US's Equality Act, and Ukraine.

To hear how well the Wizard Series 6Plus reproduced the beautiful but extraordinarily difficult-to-reproduce sound of the piano, I reprised the sound of Steven Osborne's Steinway that is captured so authentically on his album 'Debussy: Etudes & Pour Le Piano', on Hyperion (CDA68409). I don't know how he does it so reliably, and so often, but there's no doubt that Hyperion's engineer, David Hinitt, is a sound magician. Of course, it's Osborne who has to take credit for the music, and it's a credit to him that he makes the *Etudes* so interesting and so listenable, particularly as they can sound like Hanon exercises under lesser fingers. But impressed as I was, nothing quite prepared me for the pianism of *Pour le piano*. The fleetness of, and power in, his fingers were made perfectly clear by the new Wizards. Listen carefully as the *Prelude* closes, too, before the start of the *Sarabande*, where Debussy calls for single notes to be played, solo, in the piano's highest octave, and then for thunderous full-bodied chords in the piano's second-lowest octave. Whereas lesser loudspeakers quail under the onslaught, the Richters rose almost effortlessly to the challenge. The *Sarabande* provided further opportunity to hear how well the speakers could deliver the sound of the piano's entire keyboard, though I enjoyed the musicality of the *Toccata* that follows even more.

I followed this up with more sonic magic from David Hinitt by listening to Steven Layton's recording (with the choir of Trinity College, Cambridge) of several Herbert Howell compositions, including his *Requiem* (also on Hyperion). The choral sound is absolutely

> On *Maroon*, the synth bass is even lower-pitched, but the 6Plus still came to the party and delivered the goods

gorgeous, and was lushly and lovingly delivered by the Series 6Plus. Even if you aren't a fan of classical music or pipe organ, I guarantee you will be entranced by this CD, which very deservingly has been bestowed with multiple prestigious music awards. The sound of the sopranos on *Four Anthems to the Blessed Virgin* will bring tears to your eyes, and the *Nunc dimittis* of 'The Gloucester Service' has one of the most beautiful and peaceful *Amens* you will ever hear. But while the Richters so accurately and authentically delivered the sound of the choir and organs, what was even more amazing is how clearly they revealed the differences in the acoustics between the Ely Cathedral, in which four of the works were recorded, and Lincoln Cathedral, where the other six were recorded. Absolutely luminary… this is a must-have album for any self-respecting lover of music! One reason for the eye-wateringly beautiful sound is Howell's stated musical philosophy: 'I compose for the sheer love of trying to make nice sounds.' (Howell died aged 90 on 23rd February 1983.)

You may have been wondering whether I preferred the sound of the Wizard S6Plus with their ports open, closed or indeed in 'Goldilocks' mode. In my listening room, I preferred the ports completely closed off with the foam plugs. I also preferred the look — and sound — of the loudspeakers without their grilles fitted, although unlike the decision about the ports, which was chalk and cheese, my decision about the grilles was a disputed line ball one. If you (or your important other) prefer the look with the grilles on, go for it.

CONCLUSION

Given that Richter named this speaker 'The Wizard', it was very — very! — tempting to conclude this review with a cheap play on words, such as by stating that the Wizard Series 6Plus design 'is the company's best trick yet' or that it's 'one right out of the hat'. But concluding that way would be doing a serious disservice to the work of Richter's long-serving designer, Dr Martin Gosnell (BEEng Honours), who has not only been granted numerous patents for his work but has also won the prestigious Australian Museum Eureka Award for Science and Innovation. (And besides, the editor has indulged in a little wordplay on the front cover already!)

It would be far more accurate to say that the new Richter Wizard Series 6Plus are the culmination of more than four decades of Gosnell's experience in designing loudspeakers, the last 27 years of which were for Richter Audio. They are, without any shadow of a doubt, the best Wizards yet, delivering cleaner, tighter and more extended bass, enhanced tonal accuracy across the midrange, and a sweeter, fractionally bouncier and rather more lively high-frequency presentation than previous incarnations have been capable of. So can you improve on a design that's already won multiple awards for its performance? Yes, you can!

Greg Borrowman

TECH SPECS & CONTACT

Brand: Richter
Model: Wizard Series 6Plus
RRP: $2,899 (per pair)
Warranty: Five Years
Design: 2.5-way
Frequency response: 40Hz – 20kHz ±3dB
Sensitivity: 90dBSPL
Nominal impedance: 4Ω
Dimensions (hwd): 96.5 x 22.1 x 35.9cm
Distributor: Richter Audio
Address: PO Box 231
Church Point NSW 2015
T: (02) 4962 1594
E: info@richteraudio.com.au
W: www.richter audio.com.au

Laboratory Test Report

Readers interested in a full technical appraisal of the performance of the Richter Wizard Series 6Plus loudspeakers should continue on and read the LABORATORY REPORT published on the following pages. Readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

The in-room frequency response measured by *Newport Test Labs* for the Richter Wizard Series 6Plus was spectacularly flat and extended, as you can see for yourself in Graph 1. The response was measured using pink noise as a test signal and is the averaged response of nine measurements, taken in a grid fashion with the central part of the grid being on the tweeter axis. The black trace shows the response when the bass-reflex port at the rear is completely open; the blue trace shows the response when the port is completely blocked. You can see that the on-axis response is very comfortably positioned within a 5dB envelope from 45Hz all the way out to the graphing limit for this particular test of 20kHz. Normalised, this response is 45Hz – 20kHz ±2.5dB. If I extend the window to the usual industry ±dB deviation, the response is 40Hz – 20kHz ±3dB. (Note that the response extends within this tolerance above 20kHz, but isn't shown on this graph. You can instead see it

Graph 1. In-room frequency response at one metre, bass-reflex config (black trace) vs sealed (blue trace).

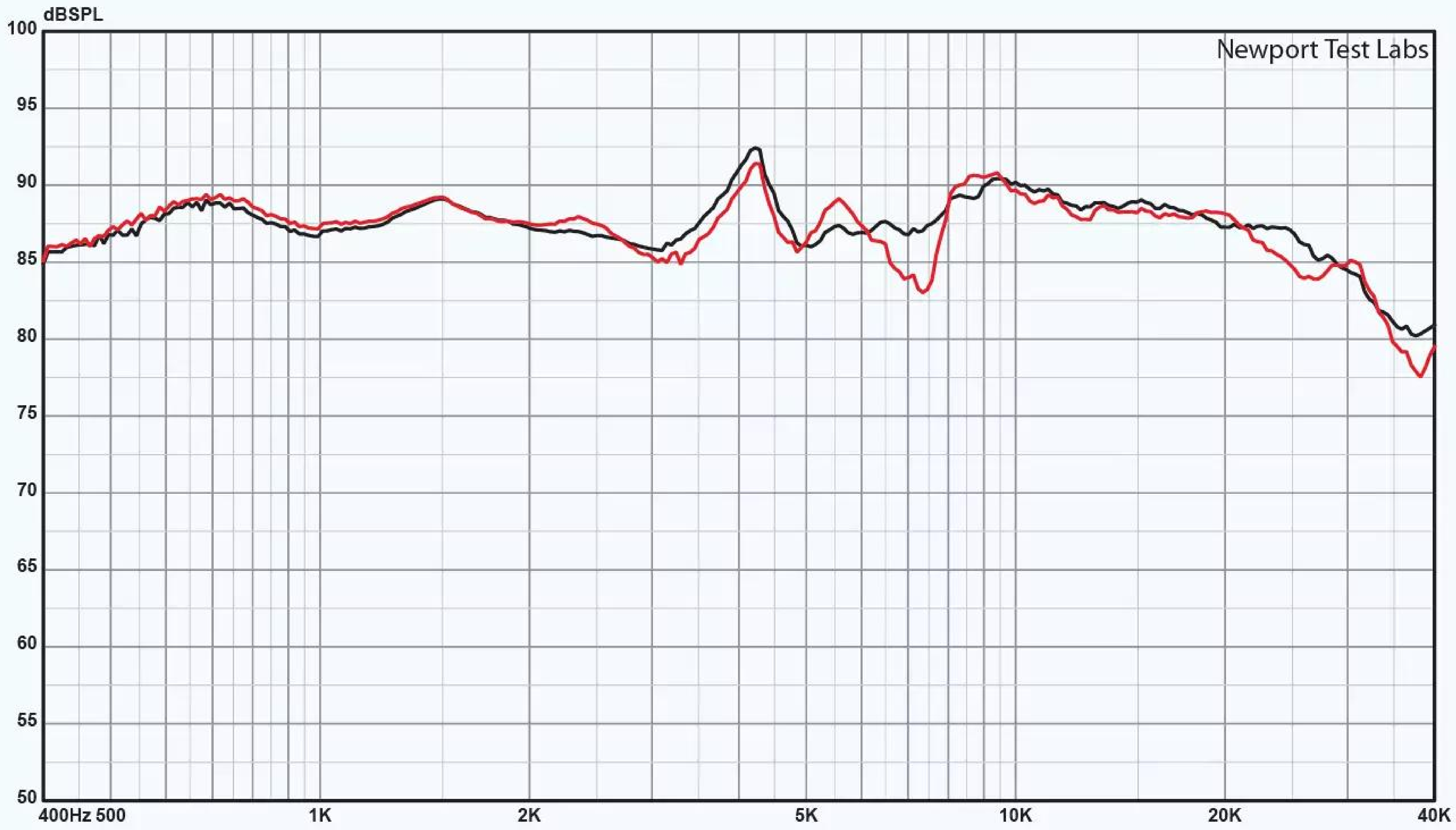
on Graph 2, about which more in a moment.)

You can see that there is a very slight 'bump' in the bass response between 50Hz and 100Hz in the bass-reflex configuration that is completely absent in the one where the port is blocked completely. The sealed response rolls off a little more steeply below 35Hz, but you could bring the response back up with careful speaker positioning. The linearity of the response between about 150Hz and 6kHz is amazingly good, being essentially within ±1dB right across this bandwidth. This will totally ensure the tonal accuracy of the all-essential midrange. There's a slight lift in the frequency response across the 7–15kHz region, but it's only about 1.25dB and therefore so far above the fundamental frequency range of all musical instruments that its only real audible effect could be a very slight brightness to the very highest harmonics.

Newport Test Labs measured the high-frequency response (Graph 2) of the Wizard Series 6Plus using a gating technique that replicates the response that would be obtained if the loudspeaker was measured in an anechoic chamber. This technique enables extremely high frequency and level resolution, and also enables the lab to look at frequencies higher than 20kHz. Firstly, you can see that the Wizard Series 6Plus' frequency response extends at around reference level right out to 25kHz, before rolling off to be 3dB down at 32kHz, putting the overall response of the design at 40Hz – 32kHz ±3dB. The red trace on Graph 1 shows the response with the front grille in place, and you can see here that the grille is essentially acoustically transparent, save for a very slight anomaly around 7–7.5kHz where there's a 5dB dip away from the response when no grille is in place. The higher-resolution measurement technique reveals there is a small peak in the response at around 4.2kHz, but it's so narrow in bandwidth that the human ear would not be able to perceive it, hence why you can't see it on the trace shown in Graph 1.

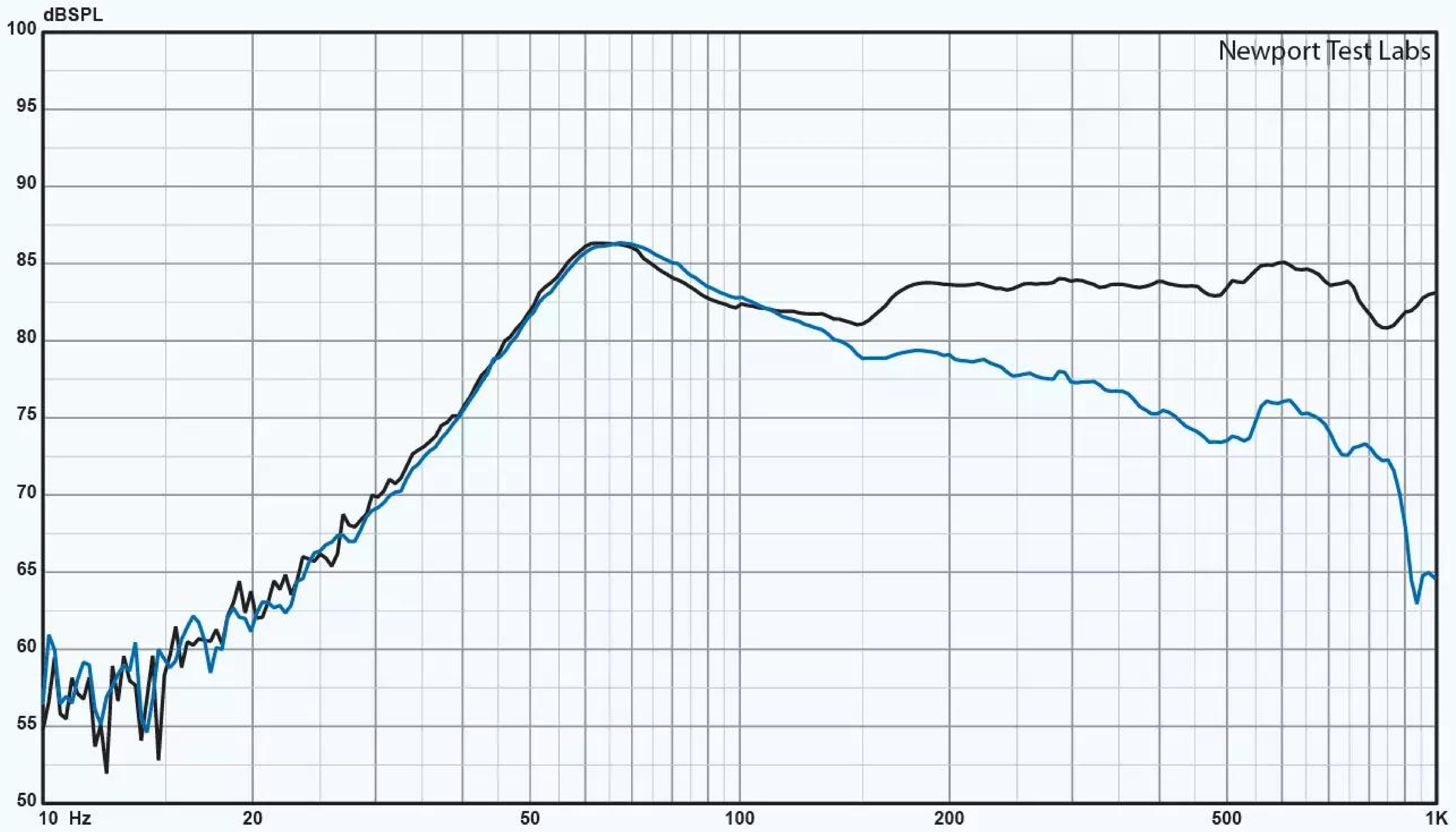
The low-frequency response of the Wizard Series 6Plus in its bass-reflex configuration with the rear-firing port completely open is shown in Graph 3. You can see that both mid/bass drivers act in concert up to 70Hz, after which the lower of the two (the blue trace) is rolled off fairly gently, at around 6dB per octave, though there is a steeper slope above 900Hz. The upper mid/bass driver's response is very linear and well-behaved, with only slight dips at 150Hz and 850Hz, seemingly apparently related to port resonances. The port (red trace) is acoustically active over a relatively wide bandwidth, with appreciable output from 20Hz right up to around 80Hz, otherwise it stays quiet except for some high-frequency leakage up around 800Hz.

Graph 4 also shows the near-field low-frequency response of the speakers, but this time with the rear-firing bass reflex port completely



Graph 2. Anechoic high-frequency response with grille off (black trace) and on (red trace).

Graph 3. Near-field low-frequency response (ported configuration). Upper (black), lower (blue), port output (red).

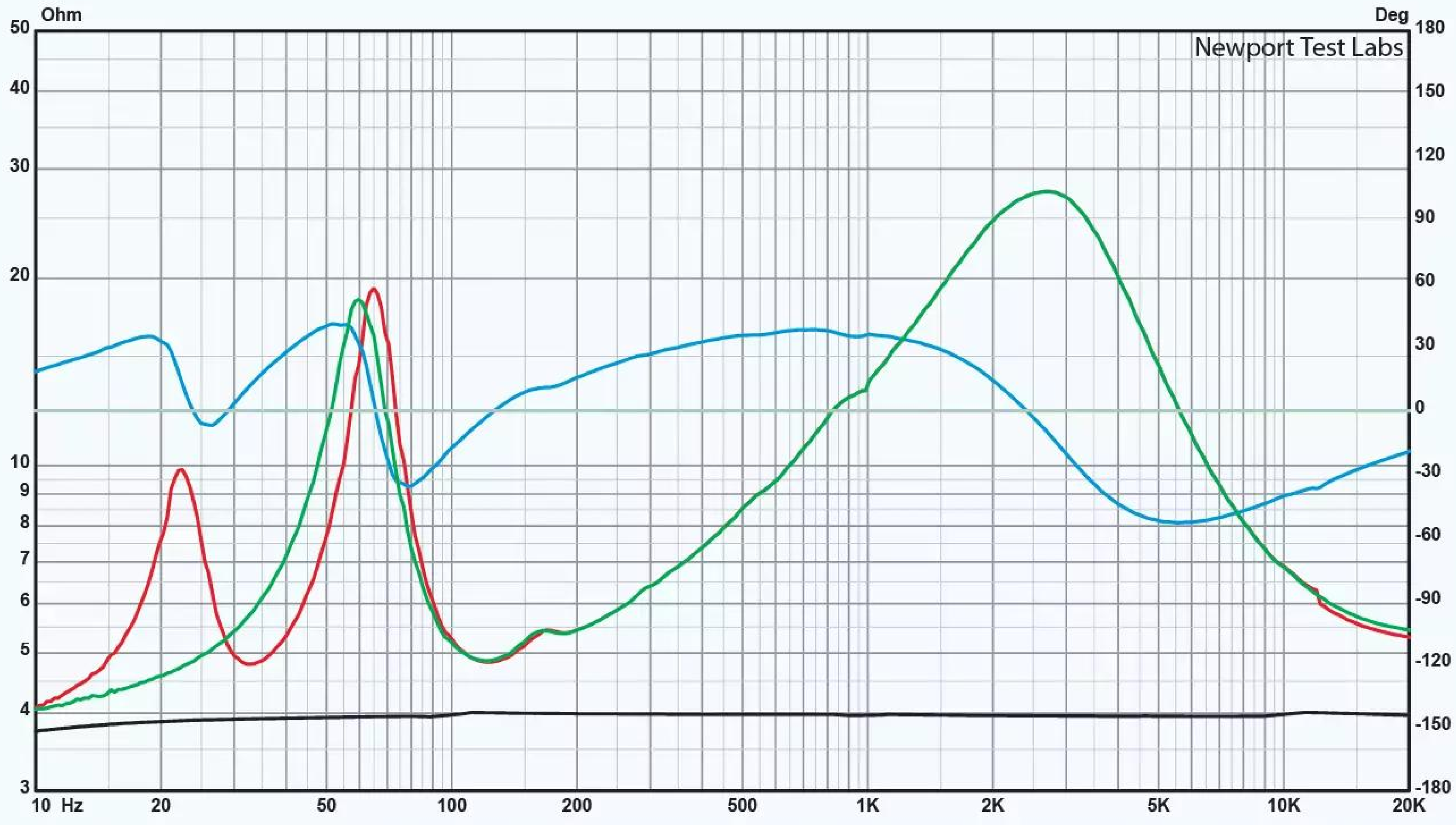


Graph 4. Near-field low frequency response in sealed configuration. Upper mid/bass (black), lower (blue).

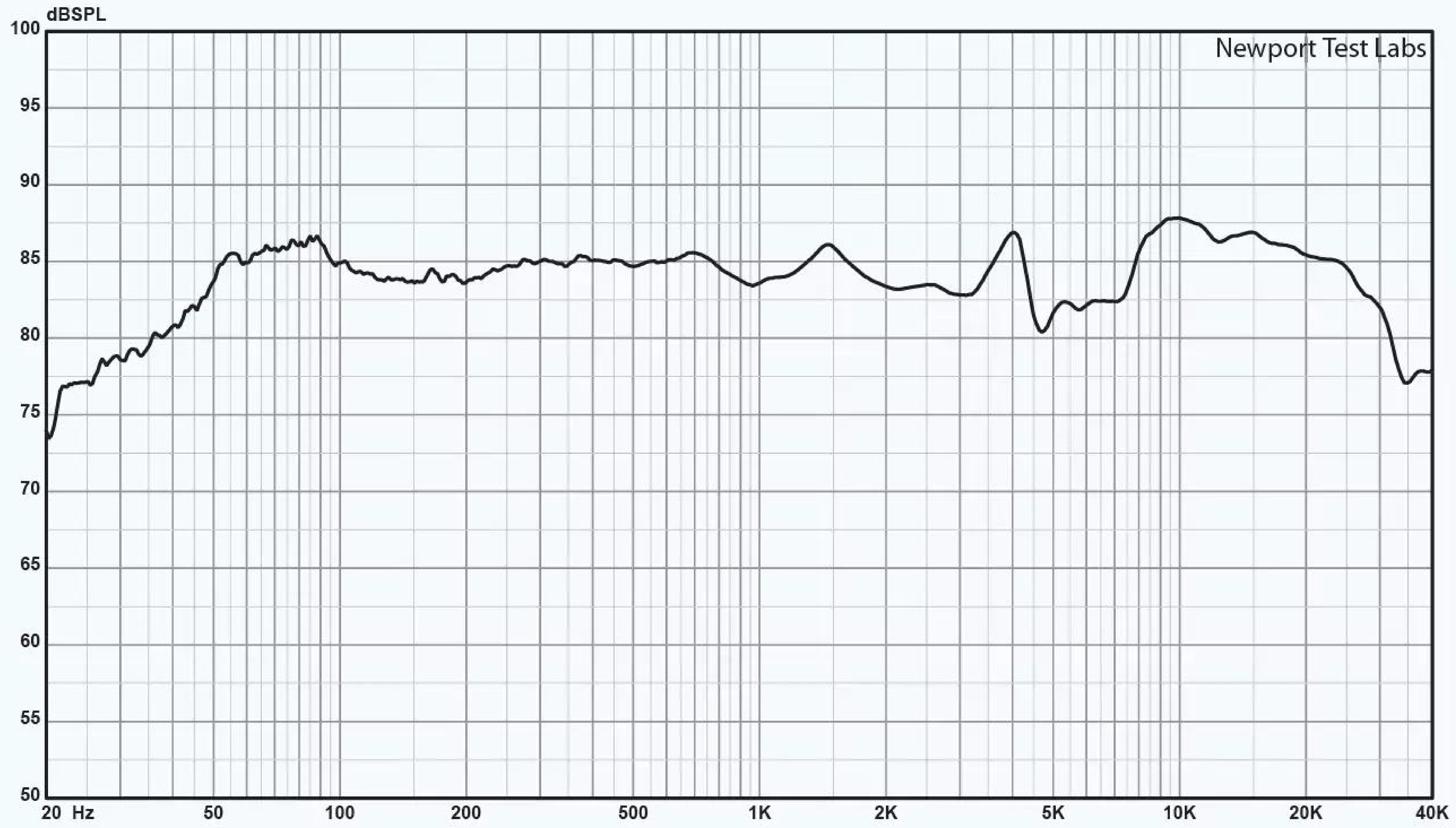
blocked by the foam puck. You can see that the bass response holds up right down to 45Hz before rolling off at 12dB per octave.

The impedances and phase angle of the Richters are shown in Graph 5. The system impedance when the enclosure is sealed is shown by the green trace, and you can see that the low-frequency resonance frequency is a little lower than for the bass-reflex configuration but otherwise similar above that resonance. The impedance in the bass-reflex configuration is shown by the red trace, and from the saddle between the two resonant peaks (at 23Hz and 65Hz) you can deduce that you should not

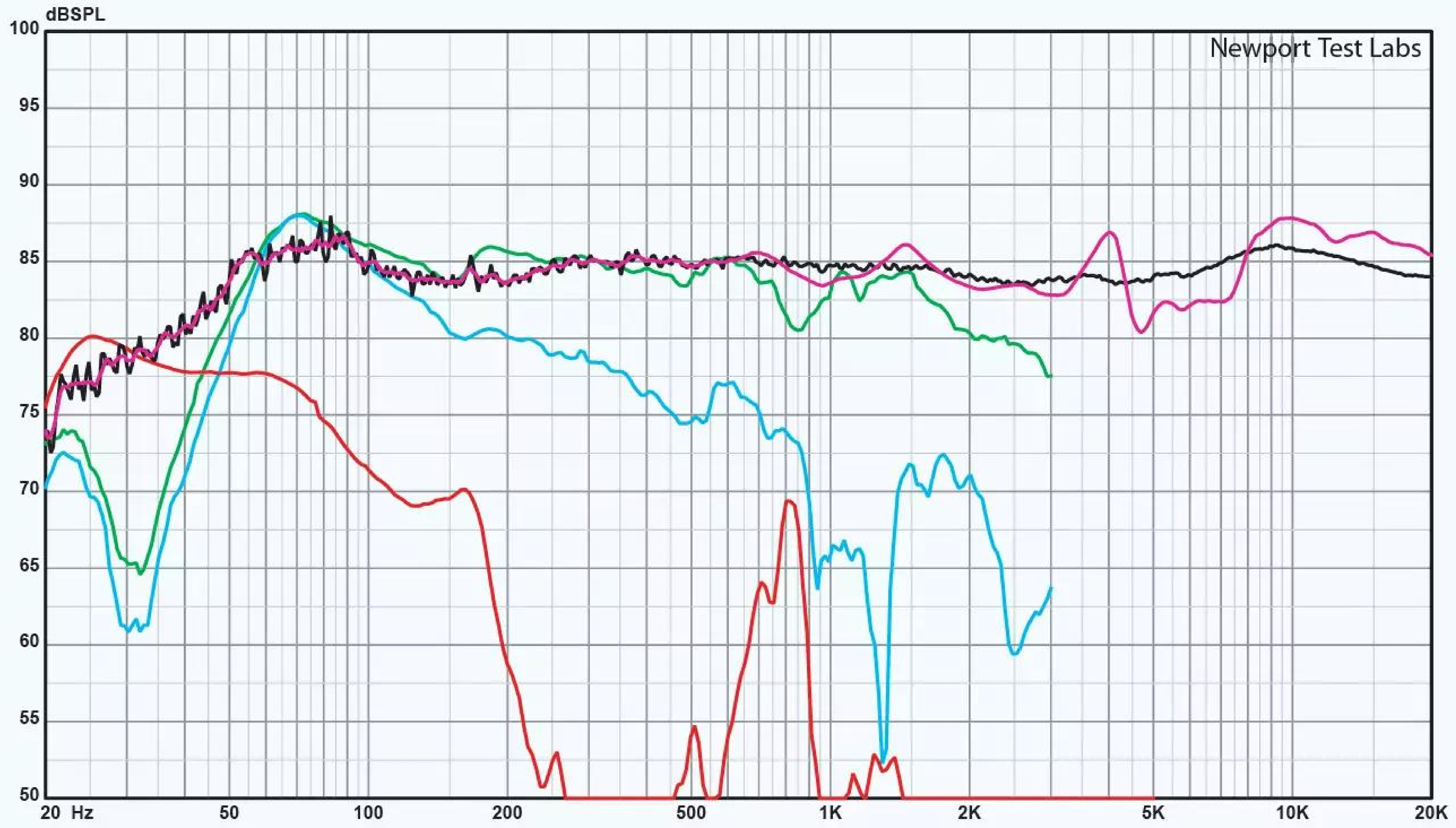
87dBSPL is a good result... you won't have to use a high-powered amplifier to extract the best performance



Graph 5. Impedance ported (red trace), sealed (green trace), phase (blue trace) and reference four-ohm calibration (black).



Graph 6. Frequency response created by splicing in-room response below 800Hz to high-frequency anechonic response.



Graph 7. Composite frequency response graph.

expect much in the way of bass below 33Hz in this configuration. There is a slight glitch in the impedance at around 160Hz which would seem to explain the one in the response of the upper bass driver, as well as that up around 900Hz, again as shown on the response trace.

You can see from Graph 5 why Richter rates the Wizard Series 6Plus design with a 'nominal' impedance of four ohms — the impedance dips below five ohms from 29Hz to 37Hz and from 110Hz up to 140Hz. But whereas Richter states a minimum of 3.5 ohms (without stating the frequency at which this minimum occurs), *Newport Test Labs'* graph shows the impedance remaining above four ohms right across the audio band. Note that the lab has included a measurement of a precision four-ohm resistor (black trace) which shows not only that the test equipment used to produce this graph is not accurate below about 40Hz, but also exactly where the four-ohm calibration should be at frequencies below 40Hz, and that the Wizard Series 6Plus stay above it.

Graph 6 shows a frequency response for the Wizard Series 6Plus where the in-room response has been spliced via post-processing to the anechoic response, and you can see here that the overall measured response extends from 32Hz – 33kHz ±4dB.

Newport Test Labs has included its usual composite graph, too, which overlays many of the responses obtained via multiple different methods to give a more complete picture of the performance. The red trace shows the response of the bass-reflex port; the green trace that of the upper-most mid/bass driver; the light blue trace that of the lower mid/bass driver; the black trace the room response measured using pink noise; and the purple trace a third-octave smoothed version of the room response below 600Hz and an unsmoothed version of the anechoic response above 600Hz.

Newport Test Labs measured the sensitivity of the Richter design as 87dBSPL at one metre, using a 2.83Veq input signal, which is exactly the average for most floorstanding loudspeakers, though a full 3dB below Richter's specification of 90dBSPL. Presumably, Richter is using a different measurement technique, but nonetheless 87dBSPL is a good result and means you won't have to use a high-powered amplifier to extract the best performance from the design. You also won't have to concern yourself with the driving amplifier's ability to handle low impedances, as the Series 6Plus' impedance is high enough that any amplifier rated for operation into eight-ohm loads will be perfectly suited.

Overall, the Richter Wizard Series 6Plus returned excellent results in all the tests performed on it by *Newport Test Labs*. They're outstandingly well-designed and well-executed loudspeakers. ***Steve Holding***

The (R)evolution of Portable Audio – Part 4

The world goes digital

Not even the Sony Walkman could shield analogue audio from the future, but the key technology that launched the CD first appeared in a telephone during World War II. Darren Yates explains…

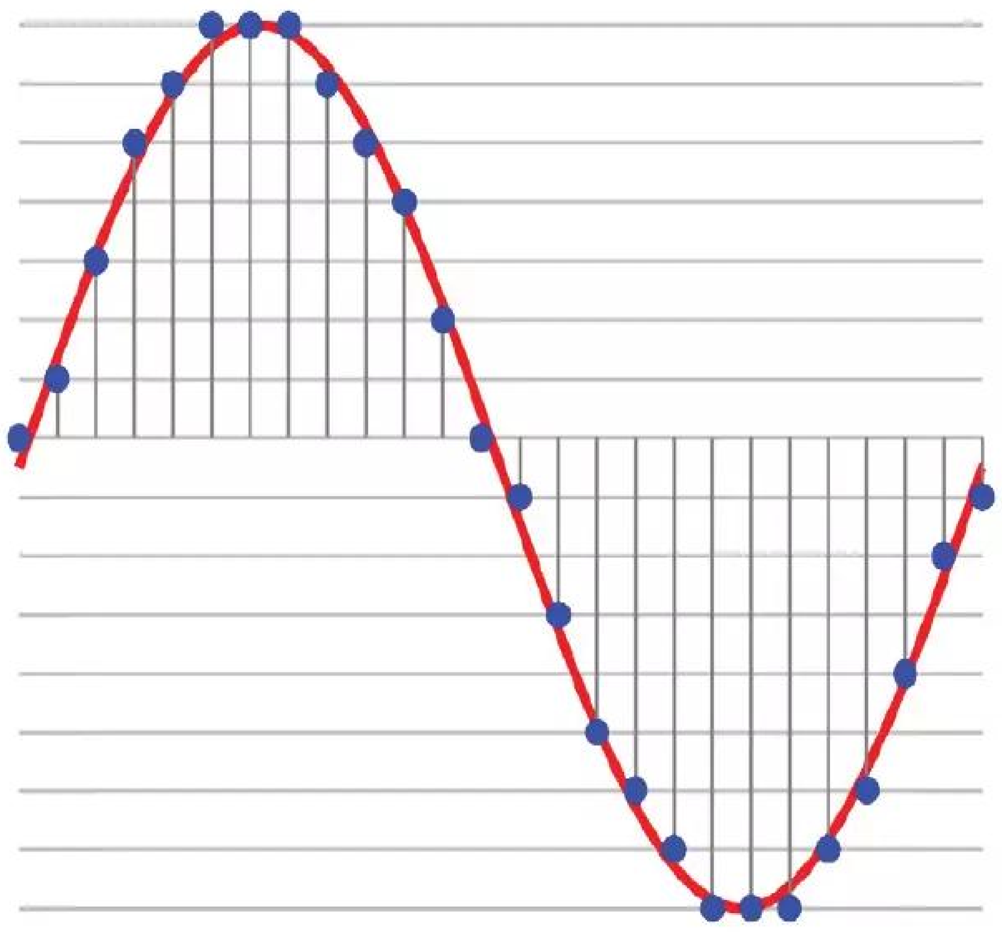
Alec Reeves had sadly passed away by the time global tech giants Sony and Philips jointly launched the Compact Disc in 1982. The optical disc that brought the world digital audio for the first time may well seem to be an invention of its time, but digital audio more broadly, and the Compact Disc in particular, owe much of its success to technology first used during World War II to secure secret phone calls between British Prime Minister Winston Churchill and U.S. President Franklin D. Roosevelt. Today, digital audio seemingly permeates almost every technology device, but like a good many inventions, it owes its existence to engineers whose names deserve greater recognition.

Pulse Coded Modulation

The son of a surveyor, Reeves was born in Surrey, U.K. in 1902 and graduated

Left: The WWII 'SIGSALY' encrypted telephony system was the first use of PCM (Image credit: Public Domain).

PCM converts continuous analogue audio voltages into discrete (fixed-rate) digital samples (Image credit: Aquegg-commonswiki, CC BY-SA 3.0).



as an electrical engineer from Imperial College, London, aged just 19. He moved to Paris four years later to work in the laboratories of the fast-growing International Telephone and Telegraph (ITT). Reeves amassed an impressive 82 patents during his lifetime, yet it's debatable that any was more influential to the future of digital audio than one awarded in 1938, the rather plainly titled 'Electric Signalling System'.

Improving audio quality, in particular reducing the background hiss in audio (improving the Signal-to-Noise Ratio or SNR), was a key battleground during the 1960s and 70s, leading to new noise-reduction technologies such as Dolby NR and dbx. But it was a battle first fought way back in the 30s around the world as telecommunications rapidly expanded.

Long-distance phone calls during that era were typically sent through a series of repeater stations. The voice audio was converted into an analogue electrical signal and transmitted, whether travelling hundreds or thousands of kilometres over cable. However, over such distances, that signal would drop in strength and require repeater stations at regular intervals to amplify that signal back up before heading off onto the next leg of the journey. The problem was that each amplification step also increased the background noise (lowering the SNR) and reduced the quality.

It was for this problem that Reeves figured out a radical solution that involved converting the audio into a series of digital binary pulses that could be easily transmitted and boosted as necessary. Then, once at its destination, the digital signal could be converted back to the original audio without the usual loss of audio quality. The solution was dubbed 'pulse coded modulation' (PCM), for which Reeves received a patent in 1938. Unfortunately, his idea was ahead of its time — certainly ahead of the electronics and thermionic valves or 'tubes' then available. In the end, the U.S. Bell Laboratories incorporated the first practical PCM audio system in 1943 into the encrypted speech system called 'SIGSALY' used for secret communications between Churchill and Roosevelt during WWII.

Transparent discs

It wasn't until 1958, however, that the other half of the 'compact disc' equation — the physical disc itself — began taking shape. David Gregg, an electrical engineer working for U.S. electronics company Western Electric, developed a transparent optical disc that used light transmission through a disc to store electrical signal data. He patented his optical disc design in 1962 and formed his own company, Gauss Electrophysics, to further the technology.

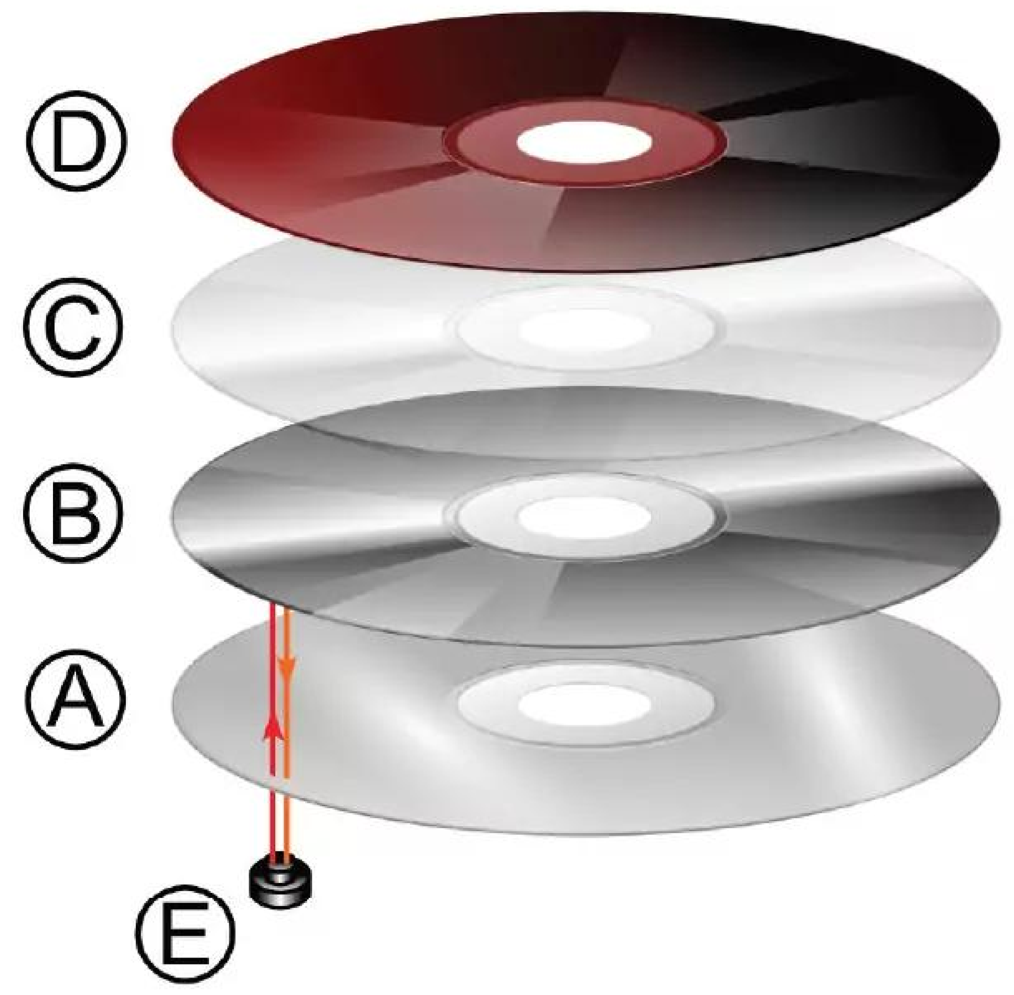
What's interesting is that the disc was designed to store analog VHS-style video — the first commercial digital video disc format was still 25 years away. The giant MCA (Music Corporation of America) eventually bought the patents to the disc technology in 1968 with a view to further improving and commercialising it.

Digital audio recording

Back in the audio world, transmitting secure phone calls as digital audio was one thing, but it was an entirely different matter to record digital audio onto some form of storage media. Reel-to-reel audio tape during the 60s managed to reach 20kHz of bandwidth at reasonable tape speeds, but it would need a bandwidth 100 times that to accurately capture a PCM signal good enough to replay as music. It's a bigger story for another time, but the solution already existed in the form of the videotape recorder. These professional devices, often still the size of a fridge in the mid-60s, were recording TV signals with a bandwidth of up to 5MHz — all that was needed was for someone to come up with the right idea. That 'someone' was Heitaro Nakajima, an electrical engineer working for the Japanese Broadcasting Corporation known as 'NHK'. In 1967, he developed the first PCM digital audio

The first commercial digital audio recorder was an adapted Betamax VCR (Image credit: Franny Wentzel, CC BY-SA 3.0).

Philips went to market with its first CD player, the CD100, in 1983 (Image credit: Public Domain).



CDs consist of four layers, with data read from the thin metal storage layer labelled 'B' (Image credit: Pbroks13, CC BY-SA 3.0).

LaserDisc stored analogue video on optical discs 30cm in diameter (Image credit: Kevin586, CC BY-SA 3.0).

converter to attach to a video tape recorder. The system converted audio into a 12-bit binary data stream with a sample rate of 30kHz. Thanks to a theorem developed by another engineer, Harry Nyquist, that 30kHz sample rate enabled the recorder to capture analogue signals up to 15kHz. The 12-bit binary stream was potentially sufficient to deliver a dynamic range (loudest sound to smallest) of 72dB (about 4,000:1), an improvement on analogue tape at the time.

That original system created by Nakajima was a mono (one-channel) system only, but by 1969 a stereo system had been built. Three years later, Japanese electronics company Denon produced the first commercial digital audio recording using the recording system Nakajima had developed for NHK.

Nakajima quits

Nakajima joined NHK not long after completing his engineering degree in the 40s, but he continued his studies, receiving a Doctor of Engineering degree in 1958. His success in developing the digital audio recording system in 1968 put him on the radar of one Masaru Ibuka, better known as the co-founder of Sony. After some gentle encouragement from Ibuka, Nakajima quit his job at NHK in 1971 and walked through the front door of Sony as the new boss of the Audio Technology Centre. Another piece of the Compact Disc puzzle had fallen into place.

Philips improves the optical disc

Meanwhile, the late 60s were proving to be a fertile period for Dutch giant Philips. In the race to create a video disc playback system, Philips engineer Klaas Compaan came up with a new reflective disc design that offered improvements to Gregg's transmissive disc (including a more compact design). In 1972, Philips joined forces with MCA to showcase a demonstration 'video disc' system, but it would take another six years before 'LaserDisc' would make its world introduction in 1978.

However, those six intervening years were crucial, for during that time the VCR battle had begun and, as a result, LaserDisc would struggle to compete in the market. It would ultimately take another couple of decades before the market was ready for an optical disc format for video...

Betamax: the first digital audio recorder

In the meantime, Sony recalls Nakajima's first two years as somewhat subdued, with the company deciding to get out of the expensive LSI (large-scale integration) chip business (albeit temporarily) in 1973. Nevertheless, that same year, Nakajima and his team were reportedly just far enough away from 'head office' that they could work more or less without interference — and so, with little fanfare, they got to work on a digital audio recorder. The result was dubbed the X-12DTC — it worked but required two-inch (5cm) wide tape and was reportedly the size of a fridge. Sony showed off the machine at the 1974 Japan Audio Fair, but that's as far as it went.

However, in 1975 the Sony Betamax video cassette recorder (VCR) hit the market. Being a consumer-grade device, it didn't match the bandwidth of professional video recorders, yet the Betamax VCR still had a recording bandwidth of 3.2MHz — it was this fact that twigged team member Agira Iga into wondering whether the far more compact Betamax could be made to record digital audio. They still needed to design a PCM adapter unit to convert the original audio signal into a digitised video-like signal the VCR could handle, but the following year the PCM-1 PCM Processor was born and, combined with the Betamax VCR, became the first commercial digital audio recorder. However, the PCM-1 reportedly also copped flak from some users for producing weird 'humming' noises that would require additional research for Sony to overcome.

What about PCM and LaserDisc?

It was now 1976, the year the VCR format war kicked off, as JVC launched its 'VHS' system to take on Sony's Betamax. However, even at this stage, Sony had signed up to its next bet, the Philips-MCA optical disc system. Again, the idea of applying PCM digital audio, this time to a LaserDisc player, was floated, and by the end of 1977 Sony had constructed a 12-inch (30cm) LaserDisc disc that played only digital audio. While a normal 30cm-diameter LaserDisc was good for as little as 30 minutes of analog video, this PCM audio disc could, in theory, hold an impressive 13 hours 20 mins. Unsurprisingly, a large disc capable of so much audio-time raised questions.

The world's first CD player, the Sony CDP-101 (Image credit: Atreyu, CC BY 3.0).

Left: Initial Sony portable CD players were branded 'Discman' and evolved during the 1990s (Image credit: MiNe, CC BY 2.0).

In 1995, Sony dropped the 'Discman' name in favour of its 'CD Walkman' brand (Image credit: Lcarsdata, CC BY-SA 3.0).

Sony and Philips meet

They say 'timing is everything' and it was in the northern hemisphere summer of 1978 when Sony received an invite from Philips engineer Lou 'Compact Cassette' Ottens to come and view a new little optical disc the company was working on. As it turned out, Sony wasn't alone in the idea of an optical digital audio disc — the new Philips disc was 11.5cm and reportedly good for one hour's recording. According to Sony, it saw the value of it immediately and an agreement was forged between the two companies to commercialise the disc, with work beginning in August 1979.

While these two tech titans clashed over the Compact Cassette a decade before, they'd actually maintained a successful working relationship for the better part of two decades to this point. What's more, this new venture was essentially the ideal collaboration — Sony's expertise in digital audio was now second-to-none and Philips' reflective optical disc was exactly the tech it needed.

The 'Compact Disc'

As with most relationships, there were squabbles along the way (including deciding on the audio bit depth and the size of the disc itself). However, a more pressing issue was the development of the laser pickup unit and the LSI chips to handle new complex concepts such as data error correction. Nevertheless, prototypes of the new 'Compact Disc' system began appearing in 1981. The two partners had finally settled on a 120mm-diameter optical disc delivering stereo (two-channel) digital audio with a sample rate of 44.1kHz at 16-bit depth and a maximum run-time of 74 minutes and 42 seconds.

The problem now was convincing the record labels it was a good idea. Unsurprisingly, a good number were against it to begin with, since LP records had improved significantly over the previous decade and spinning up brand-new CD production would cost.

In the end, however, they came onboard and on 1st October 1982, with much fanfare, Sony launched the world's first CD player, the CDP-101, alongside a CD copy of Billy Joel's '52nd Street', one of 50 CDs launched on the day, all manufactured by Philips.

CDs go portable

The difference in audio quality between the Compact Cassette and Compact Disc was instantly recognisable — to the extent that Sony's Walkman, while still hugely popular, had a major new technology competitor to deal with. Predictably, the desire to do with the Compact Disc what it had achieved with the Compact Cassette became a mandate for Sony to shrink the CDP-101 into something akin to the Walkman.

However, while shrinking an analogue cassette tape system was one thing, shrinking digital technology that included PCM digital-to-audio decoding and error correction, and doing so using only battery power, was something else. The key would be LSI chip design. According to Sony, while LSI had made the CDP-101 a reality, the rapid scale of development at the time meant that by September 1983, it could build the CDP-101 into a box one-tenth of its original size. In November 1984, and with the rest of the technology miniaturisation complete, Sony launched the D-50, the world's first portable CD player, dubbed the 'Discman'.

The phenomenon continues

Today, the vast majority of digital audio we listen to features some form of lossy compression, whether it's MP3, AAC or whatever. However, that compressed audio, especially if it's music from your favourite band, will invariably have started its digital life as a PCM stream of data recorded onto a storage format. PCM remains the pre-eminent form of digital audio and continues to be used to store archive-quality recordings. It's not known whether Alec Reeves knew of the work Denon or even NHK had achieved in PCM recording before he passed in 1971, but you would think he'd have been just a little bit chuffed!

Next time, it's the 1990s as digital audio takes over and portable devices appear in all forms, but as a new century dawned, few would be prepared for a once-struggling computer company fast finding its feet again to create the next revolution in portable audio.

Japanese audio brand Denon recorded the first commercial digital audio in 1972 (Image credit: Pittigrilli, CC BY-SA 4.0).

50 years in the making: the inside story of the award-winning Yamaha YH-5000SE headphones

We're seeing a lot of hi-fi brands looking back to move forward these days, creating products that are dedicated homages to, or have been overtly inspired by, those from their yesteryears, whether in celebration of a landmark anniversary or simply to leverage today's apparent nostalgic yearning. But very few have executed the feat as well or as interestingly as Yamaha with the high-end YH-5000SE headphones it released 18 months ago.

If you're sat there thinking, "I don't remember any previous headphones of such naming", you recall rightly. The new 'special edition' (hence the 'SE') model is a bold, ambitious and, if nothing else, thorough redesign of its HP-1 from the mid-1970s, which were not only the company's first headphones but also one of the first pairs to implement a planar magnetic (Yamaha called it an 'orthodynamic') driver.

Fifty years later and following a several-decades-long absence of any such model in Yamaha's catalogue, the YH-5000SE arrived with a modern-day orthodynamic driver, an aesthetic miles away from the HP-1's Mario Bellini-designed one, and a name (and price) reflecting not their heritage link but instead their enviable position within the company's flagship 5000 Series.

In a matter of months, the wired headphones have already made a legacy for themselves, winning *What Hi-Fi?*'s 2023 Temptation Award in recognition of their unprecedented sonic ability at this level, a judgement shared by many other specialist audio publications and, seemingly, an even greater number of audiophile forum fiends. I was certainly very impressed with them during my two demo sessions, if you recall my thoughts penned in last year's Jan/Feb #529 issue.

With this in mind, you'd understand my desire to pounce upon the rare opportunity to talk to the engineers behind the YH-5000SE as well as its debut — and timely! — high-end headphone amplifier, the HA-L7A, to shed further light on how such landmark products came to fruition. Thank you to Ryo Hadano, Chikara Kobayashi, Ryota Sato (sound engineering team), Tsutomu Takeshita (product planning) and Kazuaki Ohsawa (global marketing) for their time and insights.

BACK TO THE 1970S

Not all masterpieces can be created as speedily as the Strange Case of Dr. Jekyll and Mr. Hyde novel and Rocky screenplay (three days), though it may surprise you to read that the YH-5000SE were as long as seven years in the making.

It must have been sometime in 2015, then, that Mr Hadano found drawings of the HP-1 in the company's old drawers and began studying its orthodynamic design — not so easy as there wasn't much information available internally. He only had the drawings and some external web pages to go off. Indeed, none of the engineering team were around in the HP-1 days, with only one having been born by that time — and only just!

Mr Hadano was considering new products for Yamaha at the time and recalls how he was "impressed by the technology and mood" of the '70s headphones. The team was motivated by the idea to create a modern-day orthodynamic driver headphone that would "connect deeply with our customers (especially our passionate music lovers)" — even if the product would be rather niche. And besides, Yamaha knew people had been waiting for the brand to come back into the audiophile headphone market, not least those who still turn up to audio shows clutching their own HP-1.

"Fortunately, we were able to create a 'quick & dirty' prototype of the YH-5000SE by getting hints from those past drawings and cooperation from engineers both in and outside the company," Mr Hadano tells me. The team tested the prototype's sound and believed the orthodynamic design had the potential to withstand the music sources of today.

Green light, full speed ahead.

But not so fast because, as the seven-year timeline suggests, the task at hand was far from a simple one...

ORTHODYNAMIC DEAD-ENDS APLENTY

"Ortho" in Greek means "correct" and "straight" and, to quote Yamaha's own literature, its first-generation orthodynamic driver was based on the idea of correctly driving the diaphragm for greater sonic accuracy. So just briefly on how the orthodynamic (planar magnetic) design works: an ultra-thin diaphragm etched with a voice coil sits between opposing magnets, so when a music signal flows through that patterned etching, it generates magnetic fields that interact with one another to make the diaphragm (and voice coil) move and produce sound. As a wider surface area is being driven and the design is lightweight, the orthodynamic driver can offer greater responsiveness and lower distortion than the conventional moving coil one.

Essentially, it was the result of hi-fi and headphone brands in the '70s experimenting with electrostatic and planar technologies in order to push the heights of consumer audio kit in line with the advancing studio recording ambitions of not only stereo tracks but also multi-channel (yes, this was when 'The Dark Side of the Moon' changed the world, man). And it was a success.

ORTHODYNAMIC EST. 1976
MADE IN JAPAN

Mario Bellini's HP-1 legacy is apparent: the YH-5000SE also use a double-layer headband, designed to spread the pressure laterally across the whole head for peak comfort

"The HP-1 was very good, as our old engineers paid much attention to its development," says the engineers today. "But it's not good enough for now."

To that end, the HP-1 driver design was evolved in three key areas for the YH-5000SE. Firstly, the frame of the driver has a larger opening than the HP-1's to allow for a higher sound passthrough from the diaphragm. Secondly, whereas the HP-1 had a fixed axis in the centre of the diaphragm (enabling stable manufacturing as well as an airtight seal for decent bass delivery), the new driver removes this completely, reducing the resonance it inherently causes and consequently allowing for greater dynamic and low-end expression. Thirdly, the HP-1's thick felt damping was replaced by a micropore damper to increase attack and agility and reduce losses in the mids and highs.

The result is, in Mr Hadano's words, "a faster response than any other model we have developed in the past... the realism of the instrument's attack is outstanding". OK, so that all paid off. But manufacturing a driver — which, I should say, is rather unusual due to its truly circular diaphragm and spiral, as opposed to switchback, coil — was fraught with challenges.

"To achieve both sound quality and mass productivity, we tried over 1,000 different prototypes of diaphragms and this is one of the reasons why it took so much time to develop this model," says Mr Kobayashi. Why didn't the team give up on the orthodynamic after the 500th? Because the headphones' historical context was very important to the team.

> "It's not only the sound but also the concept of the design — you cannot realise it until you wear them"

"The moulding and pressing of the diaphragm film was very difficult," explains Mr Hadano as he reaches for his box full of prototypes and tools to show me. "It is very delicate to touch and easy to deform when removing it from the mould. It took many trials and I crushed my mould many times! The magnet gap of an orthodynamic driver is extremely narrow, too, so strict manufacturing is required, with no slight deformation allowed.

"It took a long, long time... we hit many dead-ends during development... but we eventually found one method of making this process. But it's top secret! Very few people in the company know the process." In the interview room of five, only two of them were in the know — Mr Hadano and Mr Kobayashi. (Mr Hadano is, by the way, one of the internally trained "golden ears" in Yamaha's 'True Sound' team, which signs off on the sound of all products.)

And this is all before you get to the headphones' "complicated... not easy to make" structure, which is made out of magnesium, chosen for its plastic-like lightness but greater strength and rigidity, and a big contributor to how comfortable, and consequently suitable for long listening, the YH-5000SE are. (They weigh 320g, in case you were wondering, making them lighter than the Focal Utopia (490g), Final D8000 (523g) and Sennheiser HD800S (330g) — all models which Yamaha says were used to compare and benchmark the YH-5000SE from a sound performance perspective.)

Considering the manufacturing complexity involved, it's perhaps not surprising that the YH-5000SE are produced and assembled at Yamaha's Kakegawa factory, where its grand pianos and reference audio components are made. "We have a lot of factories — in Japan, Malaysia, Indonesia — but we decided to manufacture them here," says Mr Ohsawa. "Nowadays it [production] is stable, but half a year ago there were still difficulties to overcome and, as the factory is only a 40-minute drive away, our best engineers could go there right away to fix something."

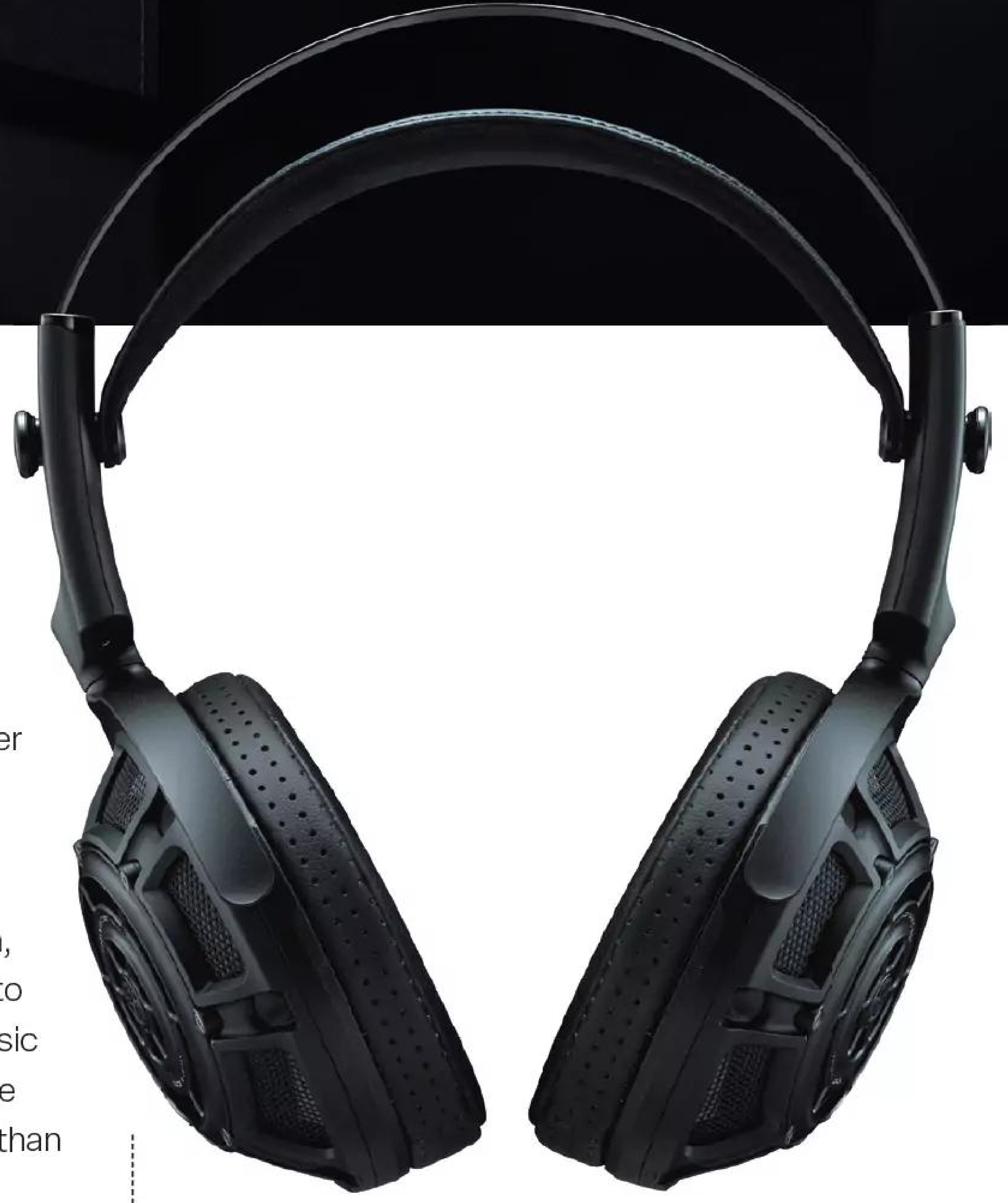
AIMING (VERY) HIGH — AND TRICKLING DOWN?

Understandably, it'll be harder for some more than others to perceive headphones that cost as much as a second-hand car. (Oh, did I not mention the YH-5000SE's $7,499 price tag? Well, there you go.) That's why Mr Kobayashi urges people to try them: "It's not only the sound but also the concept of the design — you cannot realise it until you wear them."

The team acknowledged that there are opinions about the price (!) but told me it was confident with the balance between it and the quality on offer. Still, regardless of it being, in my mind, justified by the performance, such a figure will naturally rule out many head-fi fans as owners. So, as I first asked myself no more than 30 minutes into my initial listening of the YH-5000SE, will more accessible pairs come down the track? Yamaha couldn't (or wouldn't) reveal any solid plans, but its head-fi future sounds promising, with the team agreeing that it sees high potential in the market — a market that, Mr Ohsawa notes, has a lot of dedicated shows around the world attended by many generations.

"We have just begun in the headphone category," says Mr Takeshita, "and will try to continue to challenge ourselves in the future." Hadano adds: "The knowledge gained through

The power supply unit's protruding cylinders, which stand proudly on the top panel, house a pair of internal mains transformers — one feeds the preamp section, the other the power stages



the development of these headphones will be carried over to future Yamaha head-fi products."

So it seems like more a case of 'when' rather than 'if', even if the rest is hush-hush for now. Yamaha's hi-fi division turns 70 this year so, more headphones or not, I hope to see special things from the company throughout 2024. Watch this space…

A MATCH MADE IN HEAD-FI HEAVEN

The YH-5000SE are not so much 'special edition' headphones as a 'special edition' headphones package, coming with a dedicated stand, two types of cables — one 4.4 mm Pentaconn balanced, one 3.5mm (XLR leads are an optional extra), and two pairs of earpads — one suede, one leather. Why two earpad types? Yamaha's Affective Evaluation Group, which undertakes various sensitivity assessments for everything from speakers to musical instruments to understand how people feel about them, found that consumer preferences were split across the two materials. Yamaha decided to include both to cater for different sound signatures and listening environments.

But there is an important 'accessory' that was made for the YH-5000SE and which marks another 'first' for Yamaha: a high-end headphone amplifier. Not a bundled accessory of course, the HA-L7A was born from the same team that created the headphones, allowing it to be a ground-up design and deliver sonic synergy between the two — though Mr Sato made a point of saying it was tuned using several other high-end headphones, too.

"We wanted it to drive all kinds of high-end headphones and bring out the maximum potential of all kinds of content," he says. That second point was crucial to the amplifier's design too, as the team realised that people nowadays listen to more than just music and so wanted to ensure the HA-L7A was a versatile performer for streaming TV shows and movies as well as various music. That's why Yamaha has included a Sound Field mode, giving owners six DSP presets — including Cinema, Outdoor Live and Concert Hall — designed to create optimal sound depending on the music or video source being played. And it was one of the reasons it decided on a digital rather than purely analogue design, too.

Users of Yamaha's AV receivers will recognise this as a feature the company has heralded for years in its home cinema offerings, while the patented Floating and Balanced Power Amplifier technologies at the core of Yamaha pre, power and integrated stereo amplifiers are present here too, naturally optimised for headphone applications. "Entering the headphone amplifier market, we wanted to stick to our strong points," says Mr Sato. "The HA-L7A takes both the advantages of our hi-fi products, which have been around for almost 70 years, and our 35-year AV receiver history."

The 'dimension' brought by that unique Sound Field technology is reflected in the HA-L7A's physical design, which is certainly a talking point owing to its distinct 'L-shape'. But that shape is also central to its acoustic engineering.

'Sticking out', you could say, are dual toroidal transformers, which the power supply uses independently for the minute-signal circuitry and the amplifier section. They sit directly above the power supply board, minimising the circuit path, and this — plus the ground-isolated circuit boards and heavy-duty chassis design — is all in the name of eliminating noise.

"When you're listening to speakers, the noise is not such a big issue compared to headphone listening [where] noise can be very easily recognised," explains Mr Sato.

I'll shortly be going the full twelve rounds with the HA-L7A, although my first impressions from demo sessions last year were positive. Yamaha is, naturally, confident in its ability at its price point of $6,999: "We compared this product with competitor models using reference sources and headphones and found that the sound pressure range, soundfield and localisation were as we intended," Mr Sato concluded.

A match made in head-fi heaven? I wouldn't bet against it. ***Becky Roberts***

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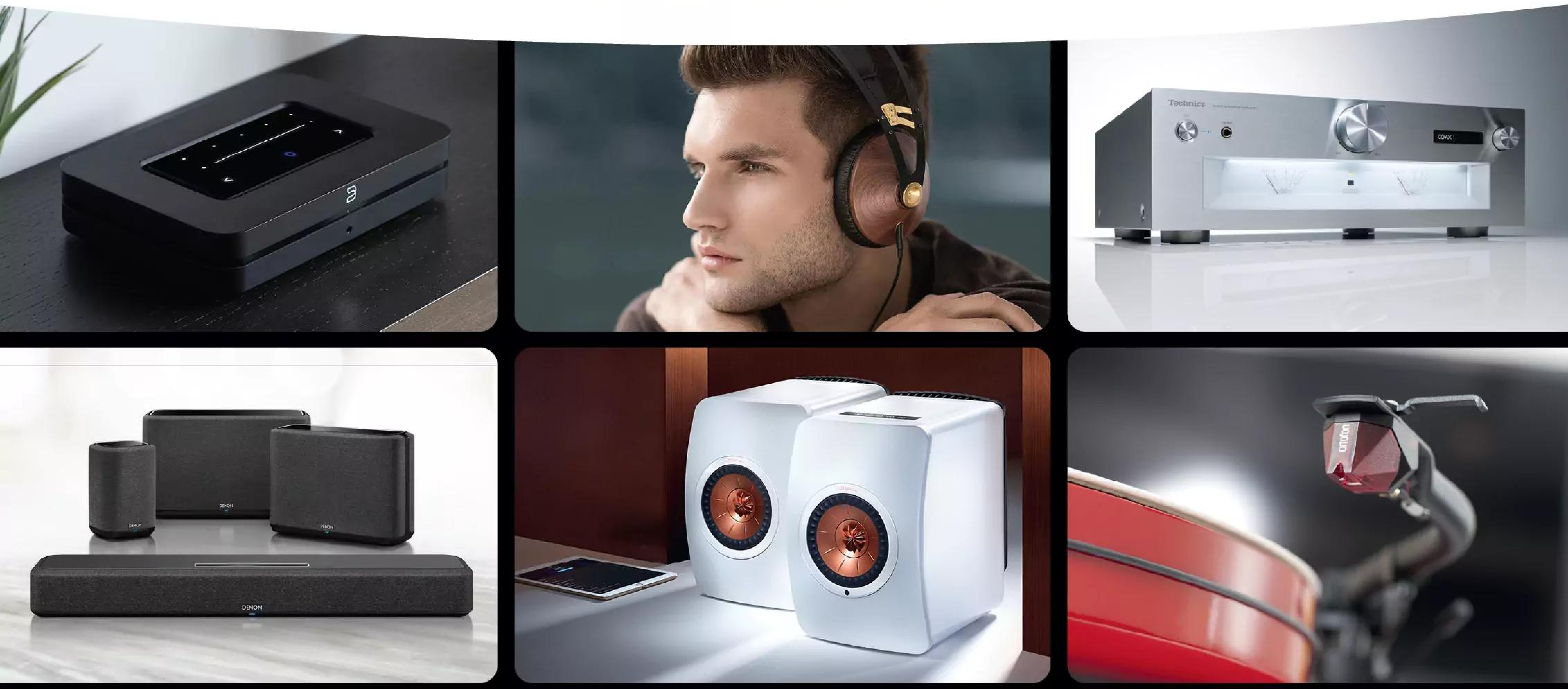

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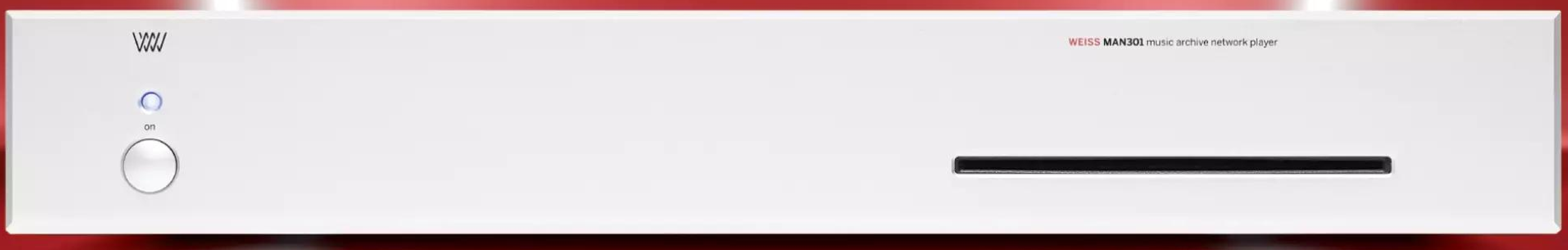

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FUTURE

Podcasts for music lovers

Pretty much anyone can start a podcast these days and recommendations aren't exactly hard to come by, but it can be a rough tide to navigate given how ubiquitous and wildly varying in quality they are — and nowhere is that more the case than on the subject of music. So consider this a prod to a handful worth listening to...

Song Exploder

This has become one of the most listened-to and acclaimed music podcasts going, now celebrating its 10th year running. The premise is simple: an artist speaks about one of their songs, breaking it apart — exploding it, if you will — to explain how the track came to fruition. Song Exploder's ever-growing popularity has meant it has welcomed the likes of R.E.M., Lindsey Buckingham, Madonna and Kae Tempest during its 260+ episodes thus far.

And to celebrate its 10th anniversary, there is now a special, deluxe edition episode of its very first pilot episode (which aired on 1st January 2014) that focuses on The Postal Service's *The District Sleeps Alone Tonight*, with new interviews and insights added in.

▶ **Listen at https://songexploder.net/**

Switched On Pop

Should you care about Ed Sheeran, Miley Cyrus, BTS and Justin Bieber? Can algorithms write pop songs? Why does every intro sound like it's underwater? Did you know John Denver is huge in Asia? Although one can barely move for think pieces on classic records by critics' darlings, the world of mainstream pop music has been somewhat neglected. To remedy that, musicologist Nate Sloan and songwriter Charlie Harding are here with Switched On Pop, a podcast where they explore the craft of creating some of the world's biggest pop songs — and refreshingly, they do so with genuine love and admiration for their subject matter.

▶ **Listen at https://switchedonpop.com/**

Made by Music

We told you everyone was doing a podcast now; even hi-fi brands are getting in on the action. London-based Cambridge Audio used last year's High End Munich show to launch an unusual product: a podcast series where technology and music journalist Sean Hannam interviews legendary artists and producers about "the moments in music that shaped their lives and careers".

Hosted on Spotify, Made by Music now has over 25 episodes and has featured musicians, producers and other creatives such as Boy George, Norman Cook (aka Fatboy Slim), Irvine Welsh and, the Toast of London himself, Matt Berry. In each episode, they talk about their musical history, the records that influenced them, and specific artists/bands and songs that were milestones in their careers.

▶ **Listen on Spotify**

Tiny Desk Concerts

NPR's All Songs Considered podcast, a weekly voyage of music discovery, could easily have made this list, but the Tiny Desk Concerts has become so iconic it would be remiss to overlook it here. The concept again is simple: America's NPR (National Public Radio) gets some of the world's most interesting and exciting artists, crams them into a small space and has them perform stripped-back versions of their work. And each episode is only around 15 minutes. You've likely seen a few on YouTube (Lizzo's is one of the most joyful), but their availability as audio-only makes them ideal for the commute.

▶ **Listen at www.npr.org/podcasts/510306/tiny-desk-concerts-audio**

And The Writer Is...With Ross Golan

What goes into the process of writing a song? That's the topic of the 'And The Writer Is...' podcast, which shines a spotlight on the songwriters behind your favourite tunes. Hosted by two award-winning songsmiths, Ross Golan and Joe London, each episode takes a peek behind the musical curtain and goes in-depth into the alchemical musical writing process and the rules each songwriter has to bring the songs you know to life. With over 170 episodes, there are insights from artists ranging from Mike Shinoda to Charli XCX via Lin Manuel Miranda.

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Blackberry Smoke

Be Right Here

3 LEGGED RECORDS

Can it really be 20 years since Blackberry Smoke rolled up to the back porch looking like they'd just fallen off the back of a pick-up truck and were willing to work for food? As the adage goes, they've come a long way since then, although geographically they're still based pretty close to the homes they grew up in.

That might go some way to explaining how and why they've retained their rootsy charm. That sounds like the most backhanded of compliments, but Blackberry Smoke take a term like 'rootsy' and reimagine it — country, folk, hard rock, a hint of gospel.

'Be Right Here' retains the simple formula that has made the band such a success: songs, tons of songs. Regular co-writers, a band unafraid to experiment, surprising tones and textures, but the fundamentals are intact; listen to a tune, and three minutes later you're whistling the damn melody and mangling the lyrics. Swampy-sounding opener *Dig A Hole* sounds as perfunctory as you might imagine an opening song on a Blackberry Smoke album could be, before taking a left that feels right, with a middle section that elevates the whole song, confounding the melody and introducing us to soulful backing singers and luscious keyboard chords.

It might feel like a rare treat, but it pales by the time we get to *Like It Was Yesterday*, a surprise shot of pure country pop that strides in on the back of some slide guitar and loose soloing before drilling down into the tight melody line and zipping along for a tight three and a half minutes, not an ounce of fat on it. The chiming, Zeppelin-like *Azalea* — wistful, rich and full of yearning — is simplicity itself; a rich vocal, beautifully picked guitar, the basic tenets of most songs, but the result is simply magical. As is the shining *Other Side Of The Light*, a little more 'Led Zeppelin III' juxtaposed with some delicious slide guitar.

Pretty remarkable, then, that 20 years in, Blackberry Smoke are still reinventing their very own musical wheel.

Neil Young

Before And After

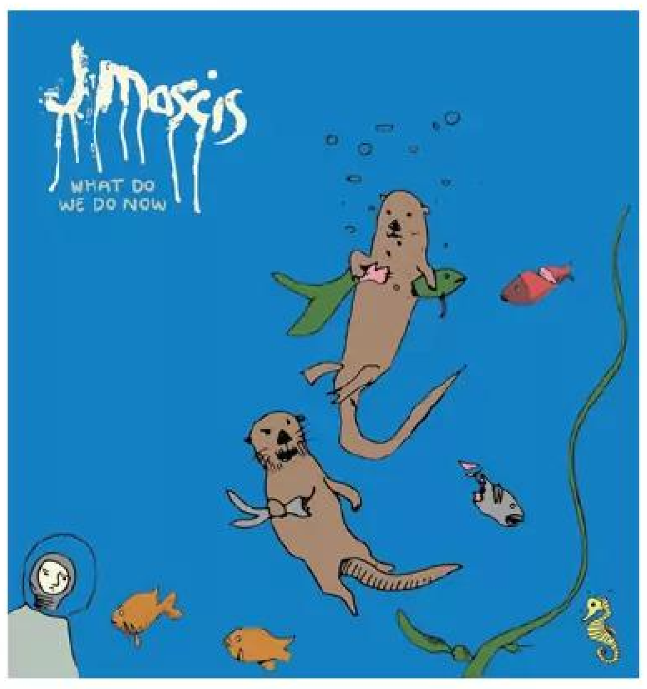
REPRISE

Another month, another Neil Young album. This one is a little different, though. For his latest album, Young covers a variety of songs from his vast back catalogue — from Buffalo Springfield's plaintive *Burned* (1966) to his recent plea for harmony *Don't Forget Love* (2021) — on acoustic, solo, one song merging into the next. The overall effect is hypnotic, mesmeric; a musical montage that has no start or end point. This is Young's forty-fifth studio album, co-produced with Lou Adler (think Carole King's 1972 album 'Tapestry'), and his flame shows no sign of dimming. Old favourites such as *Mr. Soul* and *Comes A Time*, alongside lesser-known cuts, become almost mantra-like, droning and highly resonant, imbued with the aching of years. And there's one new song, *If You Got Love*, that wails like a good'un. Perhaps not the new studio recording some were hoping for, but a fascinating and compelling deep dive into Young's past all the same.

J Mascis

What Do We Do Now

SUB POP

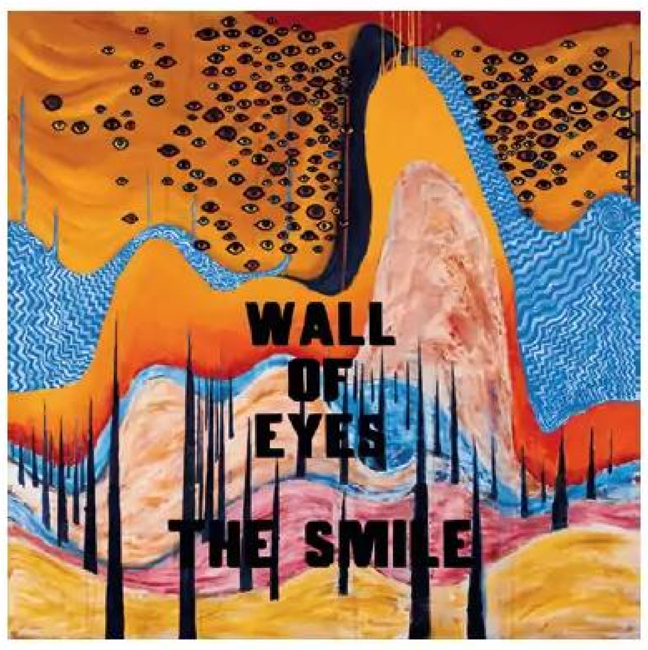


On a record full of sprawling guitar solos, textual acoustics and steady drums, J Mascis's plaintive-howl of a vocal tops off everything, adding one more layer of poignancy. If he sounds broken, it's only because he's finding a new way to express himself. 'What Do We Do Now' is only his fifth solo studio album since 1996, but it's not like he doesn't have a welter of other projects. Started during the final days of lockdown, the album may sound like a full band, but really it's just Mascis following his own lead and adding some more. Guest musicians include Ken Mauri of The B-52's on keyboards and Matthew 'Doc' Dunn on steel guitar. The standout track is the full-blown power ballad *Right Behind Me*, featuring a classic wailing Mascis guitar solo. This is truly beautiful throughout, as you've come to expect from the Dinosaur Jr mainman.

The Smile

Wall Of Eyes

XL



More prolific than their now rarely sighted mothership band Radiohead, Thom Yorke and Johnny Greenwood's new trio project with drummer Tom Skinner is back, releasing a second album in just over 18 months with minimal advance fanfare. 'Wall Of Eyes' is full of virtuosic style-hopping, from the title track's alluringly wonky avant-samba groove to the super-nimble math-rock gyrations of *Under Our Pillow*. A couple of makeweight Kraut-leaning numbers fall short of greatness, but the standouts here rank alongside Radiohead's best, their alluring aura of late-Beatles psych-pop underscored by a handful of orchestral arrangements. One example is the gorgeous, tumbling, melancholy *Friend Of A Friend*, a classic slice of Yorke-ish misanthropy couched in warm brassy ambience. Quality workmanship.

Shed Seven

A Matter Of Time

COOKING VINYL

With Shed Seven, only the band name has ever been small-scale. 'A Matter Of Time', the Yorkshire guitar rockers' sixth album and their first since 2017's 'Instant Pleasures', typically aspires to the bombastic and euphoric with every power chord, orchestral sweep and cloud-busting chorus. Whether blasting through escapist glam-punk opener *Let's Go* (to 'somewhere with the purest snow', Rick Witter suggests, such as, curiously, Argentina), cruising sunset on the breezy pop *Kissing California*, or repurposing *Pinball Wizard* as a Wonder Stuff-y jig on *Talk Of The Town*, they relentlessly aim for the maximum melodic high. Hence there's a joy-seeking vibe throughout, even on their gospel-blues-folk ode to pot and during the many bittersweet billow ballads worthy of a Voice finale. *Let's Go Dancing* waltzes in the face of mortality, and *Throwaways* ropes in Peter Doherty to add rebel kudos to an anthem of outcast glory.

Nirvana

In Utero (30th Anniversary)

GEFFEN/UME

Nirvana's first album ('Bleach', 1989) was warped, made strange by the band's then-current influences (Soundgarden and the grunge scene in Seattle, mostly). The second ('Nevermind', '91) was odder still, a zeitgeist-grabbing moment wherein pop thrill met metal overspill. The third ('In Utero', '93) should have been weaker, weighed down by the burden of expectation. That it wasn't is some testament to the triumph of will on the part of the three core members, and Kurt Cobain's punk-rock upbringing.

'In Utero' is where Nirvana became themselves in the studio. Live, they had been themselves since at least 1990. The drums are thunderous, the guitar never less than scouring and abrasive. Steve Albini's engineering (please don't call it 'production') is brutally apposite: the spotlight he shines on Cobain, Krist Novoselic and Dave Grohl is unrelenting. The flaws and the tumult and the battles are there for all to hear. Cobain's voice sounds near demonic in places (*Scentless Apprentice*, on which his scream seems to sum up the anguish and alienation of a generation). The mood is supercharged, clammy, claustrophobic — you can taste the dank and damp of Seattle's basements and LA's squalid second-storey apartments within its grooves. Rarely has mainstream music sounded so sarcastic, so lonely. 'I miss the comfort in being sad,' Cobain screams on *Frances Farmer Will Have Her Revenge On Seattle*, one of many tracks both inspired by and helped into shape by his wife.

The moments of relief aren't relief as such, just a slight lightening of the mood brought about by Scott Litt's remixes on singles *All Apologies* and *Heart-Shaped Box*, the R.E.M. producer brought in after the record company got scared the initial mix of the album was too extreme for the mainstream market. (Hardly — it debuted at No.1 on Billboard… unheard.) Neither track was exactly easy listening (nor was *Rape Me*, with its inverted *Teen Spirit* refrain), even with their damnably catchy tunes.

This year being the 30th anniversary of 'In Utero''s original release, the reissues come in several formats, ranging from a Super Deluxe box (eight LPs or five CDs) to standard digital/CD and single-disc vinyl with a bonus 10-inch. All reissues feature five bonus tracks and B-sides, and the Super Deluxe also comes with two complete shows. Unmatchable.

Muse

Absolution XX Anniversary

WARNER

Dismissed initially as Radiohead copyists, this was the record that blasted Muse into the stadium-slaying stratosphere, earning them their first No.1 album and a triumphant but also tragic headline slot at Glastonbury after drummer Dominic Howard's dad died hours after their performance. Recorded in a post-9/11 world while an (illegal) war in Iraq was kicking off, 'Absolution' saw Muse get angry as they marched into the 21st century armed with dark anthems fuelled by fear and paranoia. The end of the world (*Apocalypse Please*) and tales of abduction (*Stockholm Syndrome*) — these brilliantly constructed grandiose songs would become the blueprint for the band from here on in. This 20th-anniversary reissue comes with the remastered album and bonus audio on both CD and vinyl, along with an excellent 40-page book detailing how the album came together. Among the pick of the B-sides is an outstanding live version of *Blackout* at Vienna's Antic Arena, and a stripped-back take of *Butterflies & Hurricanes*. If an apocalypse is on the horizon, this deserves to be turned up loud before our time runs out.

Jimi Hendrix Experience

Live At The Hollywood Bowl, August 18th 1967

EXPERIENCE HENDRIX

Such is the towering legacy of Jimi Hendrix that it can become all too easy to forget his struggle in establishing his talents. Be it racism, bad management or his own uncompromising vision, Hendrix's career was one endless battle to be accepted on his own terms. Having travelled to England to establish a musical identity by forming the trio in late 1966, they were still to make any kind of dent in the US. The band found themselves at the Hollywood Bowl at the behest of singer John Phillips, sandwiched between his group the Mamas And The Papas and opening act Scott McKenzie. Despite the sonic limitations of the two-track source material, the sheer firepower of the Jimi Hendrix Experience is palpable throughout. While Hendrix takes his guitar to dizzying levels, his bandmates play just as vital a role. Noel Redding's superb bass playing underpins an incendiary *Catfish Blues*, which includes a precise drum solo that reveals Mitch Mitchell's jazz roots. There's also tenderness (*The Wind Cries Mary*), and Hendrix's under-appreciated singing voice is warm and rich throughout. This is the sound of the future fighting against the odds.

Caravan

Reissues

PROPER/UMR

With logic befitting their time signatures, Caravan's first and final (fifth) albums for Decca Records now get vinyl reissues. The misunderstood Canterbury craftsmen were prog-adjacent, sure, but their knack for melody and shy understatement, even when deigning to rock out, separates them from any genre. In fact on 1970's 'If I Could Do It All Over Again, I'd Do It All Over You', you can discern a strong Beatles influence. Their hesitancy as to whether to highlight tunes or adventurous musicianship makes for a between-two-worlds sound which is deeply alluring and pleasurable, not least on *And I Wish I Were Stoned/Don't Worry*, which offers both easy charm and deft trickery. Ah yes, those titles of theirs are divisive, although *Can't Be Long Now*, lasting 14 minutes, is a dry joke that works. Their second and fourth albums were their best, but we skip now to 1975's 'Cunning Stunts', which takes a while to love, and not just because of that title. The 18-minute *The Dabsong Conshirtoe* might be their most successful multi-part epic outside *Nine Feet Underground*.

Christine McVie

Reissues

WMG

Almost everyone in a rock group will have experienced that moment when being in a band isn't enough and nothing will do and they must record a solo project. But when members of even the most enormously successful bands release solo records, their expectations must often be low in commercial terms (even Mick Jagger struggled with success on his own terms). Which is possibly why such projects are often best left to the 'quiet one' in a band; one thinks of George Harrison's increasingly sardonic solo albums. And, perhaps, best of all, Christine McVie's work. Her visibility in Fleetwood Mac was often obscured by that of Nicks and Buckingham, but her talent as a vocalist and songwriter was often greater. These two newly remastered albums ('Christine McVie' from 1984, 'In The Meantime' from 2004) flow seamlessly from one to the other as if recorded 20 hours apart, not 20 years, full of top songs carried along by a great voice and sense of calm.

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